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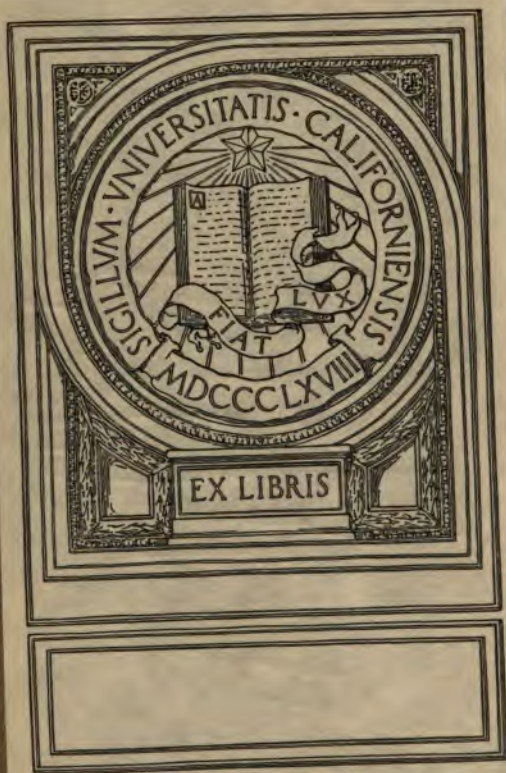
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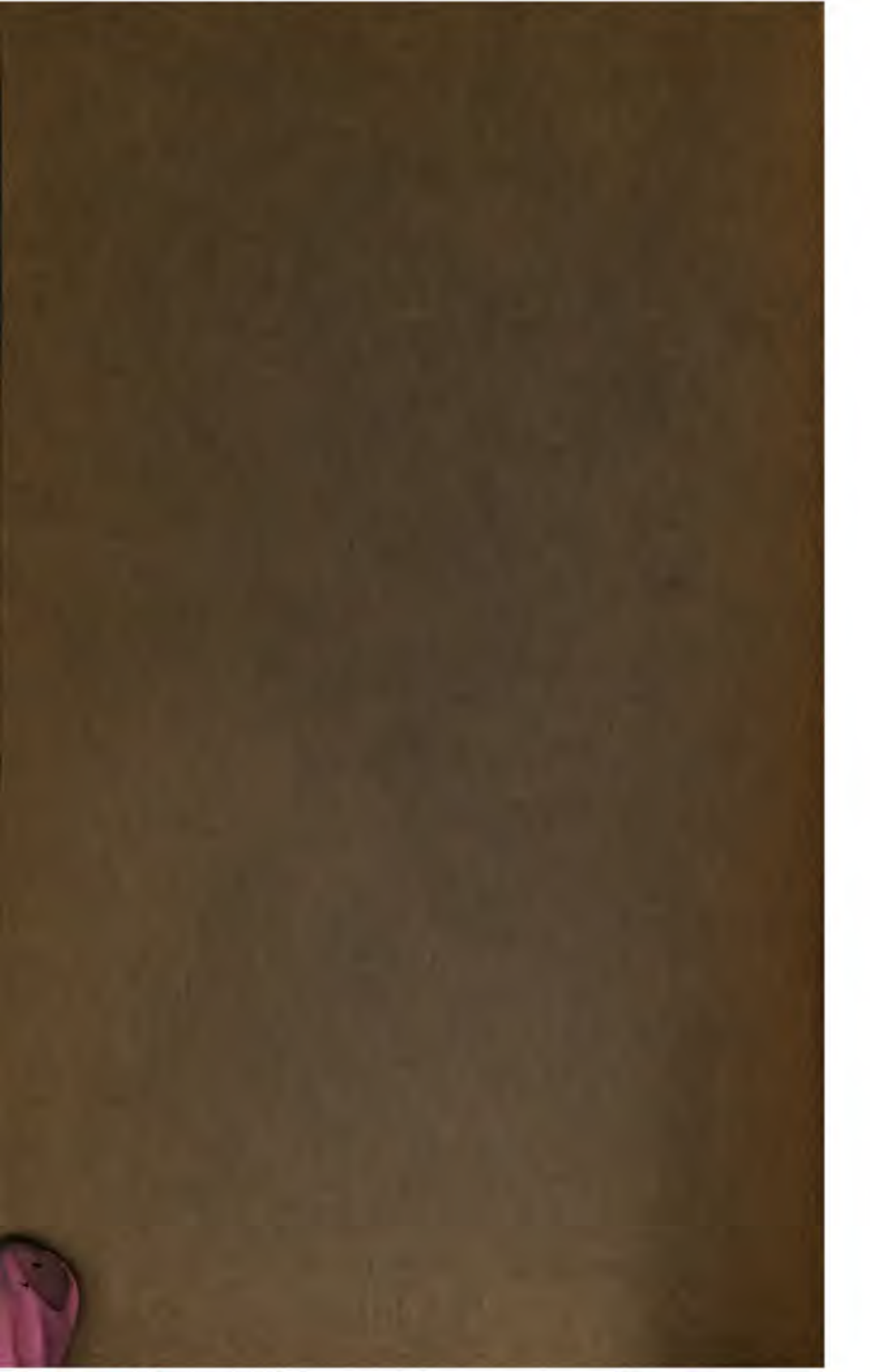
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Yale Insurance Lectures

VOLUME II

**BEING THE LECTURES ON FIRE, MARINE,
ACCIDENT, LIABILITY AND STEAM BOILER
INSURANCE; ALSO ON CORPORATE SURETY
BONDING, GOVERNMENT INSURANCE, AND
INSURANCE LAW; DELIVERED IN THE INSUR-
ANCE COURSE AT YALE UNIVERSITY**

YEAR 1903-4



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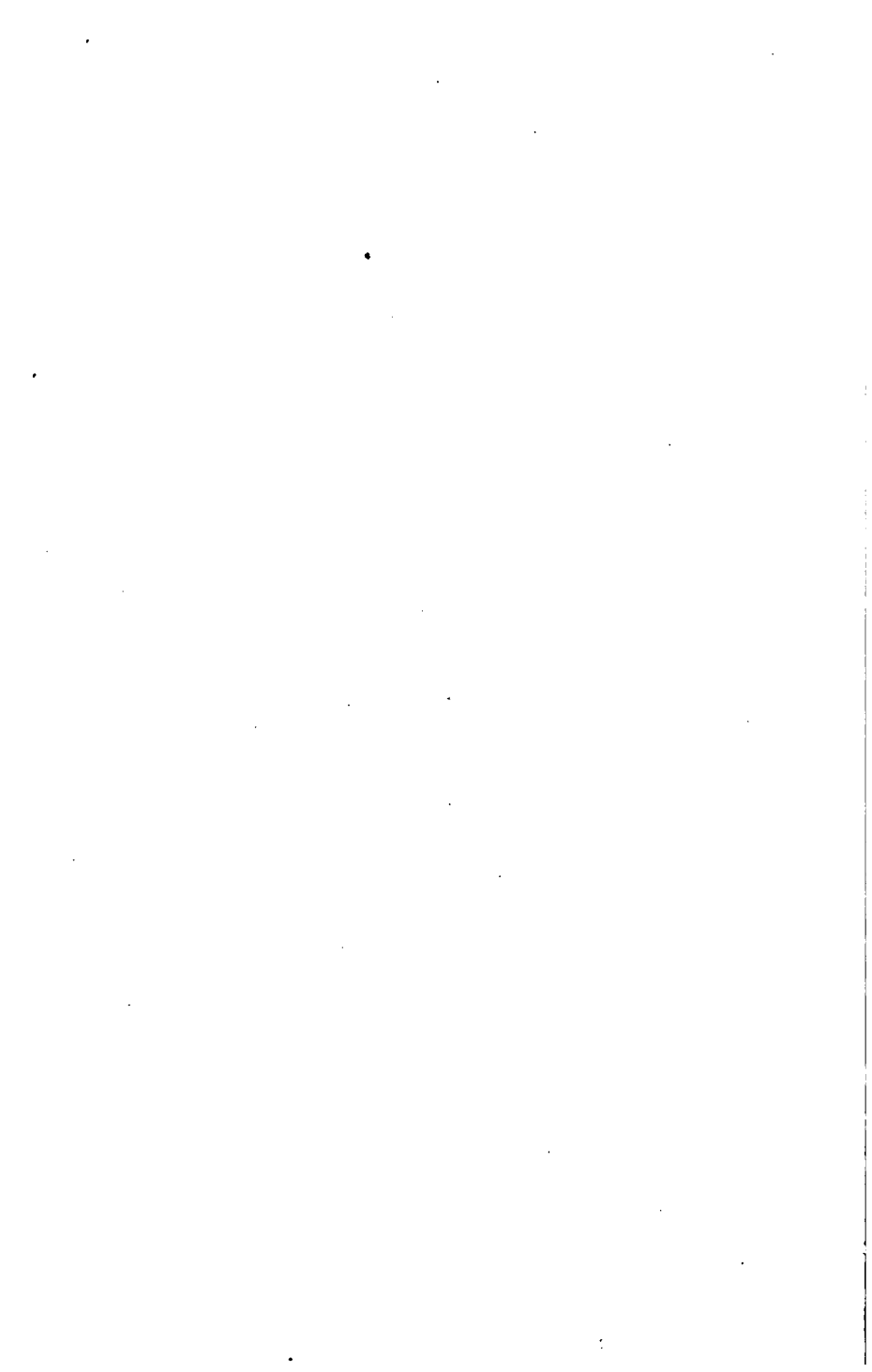
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PREFACE

Yale University, in launching a course in insurance on lines not previously attempted, gave official recognition of the profound importance and significance of the subject, considered both from the standpoint of society and the individual. Insurance had before been taught both at Yale and at other universities, but never on lines which entered so thoroughly and so deeply into the history, philosophy, economy and science of the subject. In opening this course, Yale broke new ground and the lectures which formed the main body of the course in insurance, of the Academic year 1903-4, brought together an amount of material on this subject which had never before been gathered in any such form or to any such extent.

This is said in full recognition of the large and most valuable body of insurance literature already in existence. It is the point of view taken in the preparation of this material which gives it its peculiar value to the students of the subject and to those who are interested in it either as a business or as a profession. The object of the course was to give the student such a knowledge of the fundamental principles of insurance and such a view of its extent and its methods of operation as would enable him to judge accurately of its power as an economic force, and would further prepare him for wise action when the duties of his profession or business required him to guard himself or others from possible loss. It was further intended to furnish a broad, preliminary view of insurance for those who intended to enter it later, either as a business or as a profession.

These two classes of men are found in very large quantities outside of the list of students of any and all American univer-

sities and the publication of these lectures is intended to give them, as well as those who are making an academic study of insurance, the advantages which were first given to the students of Yale, who elected this course. It is also believed that these lectures will be welcomed by those who are actively engaged in insurance work because they put in such clear and interesting form many of the most important facts, principles and problems of the subject. In other words, it is hoped that the publication of these lectures will furnish not only a text-book for those who have the advantages of academic study but a source of information to the general student and of practical assistance to the insurance worker.

Those into whose hands this volume will fall, will, we think, unite in grateful acknowledgment to all the men who gave their services in the preparation of these lectures out of their study and experience. To them the editors of this book certainly wish to render their sincere thanks for their coöperation in the preparation of the volume, and no less to the men, Mr. A. A. Welch of Hartford and Dr. John M. Gaines of New York, whose services in the difficult work of the quiz made the first and experimental year at Yale a success, and helped so materially to establish the lines on which this subject could in the future profitably be continued as an integral part of the education furnished by a university.

THE EDITORS.

FIRE INSURANCE

ITS PLACE IN THE FINANCIAL WORLD

HISTORICAL NOTES

BY RICHARD M. BISSELL

While all insurance, properly speaking, partakes of the nature of indemnity, the peculiar province of fire insurance may be indicated by the following definition: A fire insurance policy is a contract to indemnify the holder thereof for actual destruction, by a certain immediate cause, namely fire, of value appertaining to certain specified property owned by him. Your particular attention is asked to this statement, to which we shall return in a later lecture.

In a broader sense fire insurance is a tax—a tax levied through the agency of insurance companies for the purpose of distributing over the entire community the enormous loss of property which is caused each year by fire and, by this means, of avoiding the temporary financial paralysis or total ruin which would result therefrom to the individuals or communities immediately afflicted. Doubtless because of this fact, it is that fire insurance companies and their business are so unpopular with many people and especially in the eyes of law-makers. The tax gatherer has never been highly esteemed however necessary to the community his services may be.

From the foregoing it will be seen that fire insurance is not productive; it creates nothing and its benefits as to the community at large are all indirect. One marked difference to be noted between fire and life insurance is this: that while the

premiums paid to life insurance companies are some day to be returned to the policy-holder or his beneficiaries, the holder of a fire insurance policy parts absolutely with his premium for the sake of protection against a possible but by no means inevitable or even ordinary misfortune. And yet fire insurance is indirectly a great aid to business and enterprise of every description,—a necessary conservator, one of the principal bases of credit, and a great factor in the widely extended use of capital which characterizes the mercantile and manufacturing operations of our day. The need for fire insurance is at once apparent when we consider the enormous value each year destroyed by fire in this country alone, the average amount destroyed for the past ten years being nearly \$150,000,000 per annum,—a sum approximately equal to five-sixths of the entire amount collected by the national government through its tariff on imports. Yet, as Mr. A. F. Dean remarks: "While there have been few presidential campaigns in which the tariff question has not occupied the center of the stage, on the other hand the fire tax, which amounts to equal proportions, is practically ignored, not only by the political parties, but by the people at large."

The amount thus destroyed each year must be absolutely subtracted from the country's wealth, for fire insurance does not and cannot make good these losses; its province is merely to distribute them. As Mr. Dean in another place says: "It is true that when a building or city is destroyed fire insurance makes it possible to create another building or city in its place, but the fact remains that something has disappeared and the world is permanently impoverished by the event; but the loss escapes the attention of society at large because the material thing that has vanished in smoke and ashes is replaced by tribute gathered from the four corners of the land. The thing that has vanished forever is value, i. e., capital. This insurance cannot replace."

It was stated above that fire insurance is an aid to business, a basis of credit and a factor in the modern widely extended use of capital. Let us consider these aspects in detail:

First. Insurance aids business. This follows because of the security and permanency which are assured to the merchant or manufacturer by his insurance policies. Many mercantile and manufacturing establishments of the present day accumulate destructible property to the value of a million or more under one roof, subject to total destruction at any time by one fire. Without the protection afforded by insurance policies most of these concerns would be irretrievably ruined by such a calamity and those not absolutely ruined would be compelled to operate in a much smaller way for many years. Should such a misfortune come to a firm properly protected by insurance policies, however, the property loss would be made up, the scope of their business would not require to be diminished, and so far as their success was dependent on the preservation of their property the permanency of their business would be assured. These considerations apply with equal force to the small operator.

Second. Insurance is a basis of credit. Capitalists do not hesitate to loan money on buildings which are subject to destruction by fire when such buildings are protected by approved insurance. In most cases it is provided in the loan contract that insurance payable to the loaner shall be carried. Without such a provision money cannot be borrowed on real property beyond the value of the land itself.

Again, in mercantile or manufacturing business a dealer may purchase goods or a manufacturer sell on three or six months' time or even longer. Why? Because the seller knows that the property so purchased will be protected by insurance, so that if it is destroyed by fire the purchaser, i. e., the debtor, will be able to pay his debts. Wholesale dealers

and manufacturers watch this matter very closely. They will not ordinarily sell on credit to a tradesman who does not insure his stock, and when a fire occurs, damaging or destroying the property of merchants or manufacturers, it is quite common for the creditors to step in between the property owner and the insurance companies and by legal process compel the payment of the debt out of the funds due from the insurance companies. In Canada it is a very common practice for small merchants to arrange with the companies when taking out insurance that, in event of loss, payment shall be first made to their creditors.

Similarly a large portion of the business of banks consists of advances to merchants and manufacturers, but banks who are trustees for their depositors could not afford to loan to men who were liable to ruin by fire at any time. They may, however, and do safely loan to men whose credit is assured by the protection afforded by insurance.

Third. Insurance adds greatly to the extension of enterprise. A man whose total wealth was \$100,000 and who desired to go into a mercantile or manufacturing business, would hesitate to invest the whole of that amount in his business were he liable to lose it all beyond recovery by fire. Under such circumstances he would dare to invest only a portion of his capital in active business, keeping the balance as a reserve for emergencies. But if he is protected against loss by fire insurance he may wisely do business on the largest scale which his financial strength will permit; he may even borrow additional sums over and above his own capital to extend his business, knowing that in the event of the destruction of his property the loss will be made up to him from the funds of the insurance companies. Thus the activity and usefulness of capital are greatly enhanced, vast enterprises are undertaken, and the idle reserve funds of the mercantile community are reduced to very small proportions.

Communities too are conserved and protected by insurance. The great fire of London came at a time when there was no insurance, and as a result the city was crippled for many years and recovered only after enormous effort from the blow which it had sustained. "If we compare the slow recovery of London from its great fire, with the wonderful reproduction of Chicago and the substantial and rapid restoration of Boston, can we doubt that the great recuperative power of both cities was largely due to their insurance indemnity, and that without it they might still be struggling to attain the prosperity which they reached within three months after their destruction?"*

Fire insurance has been likened to the balance wheel of an engine, which creates no power, operates no part of the machinery, but nevertheless insures its regular rhythmic motion under varying strains and takes up the shock occasioned by the breaking of any minor part, which otherwise might result in shattering the entire engine.

Fire insurance as now commonly practiced is usually considered to have begun after the great conflagration of London in 1666. While marine insurance—the oldest form of insurance in existence—had been steadily developing and extending with the great expansion of trade and navigation which followed the discovery of the New World, and although merchants and ship owners from very remote times clearly foresaw and provided against the perils of navigation, very little specific attempt was made by property owners to secure indemnity for loss caused by fire prior to the date above mentioned.

It is true that some forms of provision for the aid of those suffering from loss by fire and other calamitous causes apparently existed in very remote times, as the following quotation will evidence:

* F. C. Moore, "Fire Insurance."

"The earliest application of fire insurance known to us was in connection with communes of towns and districts. These communes flourished in Assyria and the East more than 2,500 years ago. Judges, priests and magistrates were appointed for each town and district with power to levy contributions from each member of the commune to provide a fund against sudden calamities such as drought and fire. If the judges were satisfied that the fire was accidental they empowered the magistrates to assess the members of the commune either in kind or in money, and in the event of any member being unable through poverty to meet his share of the contribution, the deficiency was made up from the common fund. These communes still exist in a modified form in China."

As early as 1240 A. D. the laws of Count Thomas of Flanders provided that the members of a community as a whole should make good a loss which fire might cause to an individual unless the incendiary who caused the fire could be discovered, in which case the loss was to be made good from his property and he was to be banished.

It will be noted that the plans outlined above contemplated an assessment by the state and that all property owners were protected. We may discover here, therefore, the beginning of state fire insurance, which will be later more fully described and which continues in Germany and elsewhere to this day on a large scale.

Another method for protection and security against loss by fire, water, robbery or other calamities, arose during the Middle Ages in connection with the various Anglo-Saxon and German guilds, the members of which made regular contributions toward a common relief fund.

In 1609 a plan was suggested by one of his subjects to Count Von Oldenberg, wherein it was proposed that he individually should consent to insure those of his subjects, who might

so desire, against the loss of their houses by fire upon an annual payment to him of a fee or premium of one dollar for every one hundred dollars of valuation. This suggestion was declined by the Count, though not without some hesitation, and, though he suggested that such a plan might well be undertaken by a company of private individuals, no action on his suggestion seems to have been taken. This, so far as I have been able to discover, was the first suggestion ever made looking toward the formation of a company or association for fire insurance purposes only.

In England various fire insurance schemes were proposed in 1635, 1638 and 1660, but for one reason or another—largely owing to the great Civil War—none of them was fully organized, and as late as 1667 there is evidence that fire insurance as we know it did not exist.

In 1666 came the great fire of London, which burned for four days and nights and spread over 436 acres of territory. This was an alarming and appalling calamity. Over 85 per cent. of the buildings in London were destroyed, while the property loss is estimated to have been about ten million pounds,—a sum which has been calculated to equal over three hundred million dollars at present values. In the absence of insurance this was a blow from which London was slow to recover, as is shown by the fact that in 1673, seven years later, about one thousand buildings were yet to be replaced. Relatively, this London fire was the greatest in the history of the world, and the date of it—September 2d—was observed as a Fast Day for more than one hundred years thereafter.

Immediately after the fire various plans for the protection of individuals against loss by fire began to be devised. In 1667 the first regular system for insuring buildings against fire began. In that year, one Nicholas Barbon opened an

office where he individually proposed to insure houses and buildings. A few years later, in 1680, after having had some success, he formed a partnership known as "The Fire Office." This company, for a given consideration, engaged to pay the assured the amount of indemnity declared in the policy, or contract, should his house or building be destroyed by fire, or to repair it should it be only "damnified"—i. e., damaged. No liability, it will be noted, rested upon the assured beyond the payment of the premium.

In 1681, a few years after this first company was established, an attempt was made by the City of London to establish an insurance account, or business, and funds and property were put aside and dedicated for that purpose. Houses were insured for any term up to one hundred years. But the enterprise did not prosper and was abandoned in 1683.

Then followed, in the same year, what was called the "Friendly Society." This concern, which had an existence of nearly one hundred years, conducted its business upon an entirely different plan, as follows: First, the assured paid yearly a small sum, varying according as the building to be insured was brick or frame. This charge was to cover the expenses and, we may presume, the profits of those who operated the company. Second, the assured deposited with the company a sum equal to five annual payments as a guarantee that future payments and assessments would be met as required. This money could be appropriated by the company if the assured failed to keep up his payments. Third, the assured signed an agreement to contribute his share toward the payment of any and every loss which the company might sustain up to an amount not exceeding thirty shillings for every one hundred pounds of insurance carried by him. It will be seen that all losses were to be paid from the contribution of the assured, upon whom, also, rested all liability

and for whom the operators of the company or the "undertakers," as they were termed, acted only as collectors and distributors.

This was a form of mutual insurance, as it is now called; that is to say, insurance where the policy-holders are directly liable for one another's losses. This company was also fairly successful.

Another purely mutual company was organized in 1696. This company proposed a deposit to be paid back, less expenses, when contracts should terminate; also that profits from interest on invested funds over and above losses and expenses should be divided among the members or policy-holders, and that each year a rate of assessment should be declared by the directors, according to which levies should be made on the policy-holders for payment of losses or for the distribution of profits to them. It was assumed that the interest or earnings from the accumulated deposits would pay all losses, and this seems to have been the case, for the company prospered and grew and is in existence to-day, having greatly developed in size and scope and being the oldest insurance company in existence. Its operations are limited to London and its suburbs. The original title of this company was "Contributors for Insuring Houses, Chambers or Rooms from Loss by Fire by Amicable Contribution." This was afterward changed to "Amicable Contributionship," and in 1776 the name of "Hand in Hand"—taken from an emblem used by the company in marking and designating buildings which it insured—was adopted.

The companies heretofore mentioned all confined their operations to buildings and mostly to dwellings only, but the need for insurance upon goods and stocks of merchandise was very great. About 1706, one Charles Povey opened an office for insuring such property in London. He was without back-

ing or support of any kind and furnished merely his promise to pay in event of loss. This venture was apparently greeted with ridicule and the proposal to insure personal property seems to have been commonly considered impractical. Nevertheless Povey persisted and soon began another enterprise designed to insure personal property throughout Great Britain and Ireland, but finding his first venture unprofitable devised the scheme (which would seem to be quite in accord with some very modern methods of corporate finance) of organizing a third institution to take over the other two. This was accomplished. The new concern was at first called the "London Insurers," but almost immediately after its formal inauguration in 1710 it adopted the name of the Sun Fire Office, and under this name began its successful career which still endures, making that office the oldest non-mutual company in existence as well as the first company which ever undertook the insurance of movables or personal property. It has continued to be a partnership, i. e., not a corporation, and is almost unique among insurance companies in that respect. The first contracts of the Sun provided for payment of losses out of a reserve to be made up of one-half the premiums paid, the liability of the company ceasing when that reserve should be exhausted. Later the company, doubtless under stress of competition, made its promise to pay absolute, and in 1726 a capital fund of 48,000 pounds was created as additional security for policy-holders.

Another curious feature of the contracts made by this first company doing general business was the proviso that in case of loss 5 per cent. should be deducted from claims for defraying the expense of the company's officers in investigating and settling the loss. This was reduced to 3 per cent. in 1716, and abandoned altogether not later than 1794. This feature seems to have been quite common among insurance companies dur-

ing the early history of the business, but was too obviously open to objection and criticism to endure after serious competition arose.

X X Between 1710 and 1720 numerous insurance schemes were launched, modeled after one or the other of those described above. Some succeeded; more failed or were wound up. In 1720 the first chartered companies or corporations made their appearance. In that year two companies—the Royal Exchange Assurance Company and the London Assurance Corporation—were granted charters, first to do a marine insurance business, and in the following year to also transact fire and life insurance business. This date then, 1720, marks the advent of modern stock companies in fire insurance. One of the first announcements, or “broad-sides” (as such notices were then styled) of the Royal Exchange Assurance contains the following as one of the arguments which should persuade insurers to patronize it rather than the mutual association or contributions theretofore doing most of the business: ✓

“For the security of all persons insured by this Corporation, their capital stock or fund is by their charter established and made liable and shall always be ready to pay and make good to the assured the amount of all losses by fire.”

Later in the same paper appeared the following:

“And whereas persons assured by other societies not incorporated, are subject to calls in case of a loss or a deduction out of the money due to the sufferer, those that are assured by this Corporation are not liable to any calls (i. e., assessments), or deductions whatsoever.”

These considerations—namely, freedom from all personal liability on the part of the assured beyond payment of a fixed premium and the fact that in the case of stock companies their entire capital stock and accumulated funds are pledged to the payment of losses—have no doubt chiefly caused

the commercial world to favor stock companies or corporations up to this date, when such companies do a very large proportion of all the fire insurance business, the figures for 1902 in the United States being approximately:

Premiums taken by stock companies.....	\$202,000,000
Premiums taken by mutual companies...	22,000,000

In other words, the stock companies receive about 90 per cent. of the entire amount of premiums collected.

This may be said to bring the history of fire insurance in Great Britain down to modern times. During the last three-quarters of the eighteenth century fire insurance companies, both mutual and stock, but chiefly the latter, were organized in very considerable numbers and for the most part copied the methods, contracts and practices of the earlier companies. Many of these companies still survive; indeed, some of the largest English companies in existence date from that period.

The early histories of these first ventures in fire insurance contain much curious and interesting matter, but time and space do not permit a study of their plans and methods. One feature of their early operation, however, has developed to such great proportions and has become of such great importance as to demand mention here, namely, the protection of property against fire. It was a natural and immediate outcome of the first attempt at fire insurance by Nicholas Barbon that his interest in fires and their prevention should be greatly augmented. Accordingly his and the other early offices devised metal house plates to be securely fastened to those buildings which might be covered by their policies, and then hired men and provided some simple apparatus for extinguishing the fires which might arise in or near the buildings so marked. These house plates were also considered as a mark of acceptance and assumption of liability by the com-

panies. Some offices even stipulated that liability should not begin until their plate had been affixed to the building which the policy was to cover. This it was thought tended to hinder fraud and prevent disputes. Moreover, because they brought a building under the protection of the company's firemen and because they evidenced to the public the fact that the property owner would not be ruined by fire, these plates were esteemed as desirable and valuable by policy-holders. They became in fact a sort of basis of credit, and the custom of using these plates endured, especially in smaller places, long after their original use had disappeared. In fact, such plates are used in some foreign countries to-day. In America their use was very common until about twenty-five years ago; they may still be seen over the door of many New England homes and are not yet entirely obsolete among the farmers in some sections of the country.

The ordinary method of preventing the spread of fire at that period seems to have been by blowing up buildings by gunpowder, and this work was commonly done by the artillery or Royal Gunners. The early insurance companies used also bucket brigades and hand-pumping engines. Each company had its own liveried firemen, who were expected to guard its interests. Later some of the companies organized corps of watchmen and patrolmen who should discover fires in their incipency, give the alarm and summon the firemen of the company for whom they worked. Still later, when the practice of insuring personal property began, it was found advisable by the Sun office—the first, it will be remembered, to transact that class of business—to provide a body of men for the purpose of removing insured goods from burning buildings and for protecting them when so removed from thieves and pilferers. As companies multiplied, so did their private fire and salvage corps increase in number, until in

1808 fifty fire engines were kept up by the companies in London alone. In 1825 a number of these companies consolidated their fire brigades. In 1833 all were united, but not till 1866 was the establishment turned over to the city. It seems very strange that private corporations should have so long been allowed to control and direct this important branch of civic administration.

Inasmuch as modern fire insurance had its genesis and early development in Great Britain, whence also American ideas and practices were derived, we have devoted most of our limited time to the early history of the business there and can give but slight and incidental attention to the subject in other foreign countries. This course has seemed to be proper, not only for the reason just mentioned, but because English fire insurance companies have developed more rapidly and, following the track of English ships and commerce, have carried their operations throughout the world to a far greater extent than the companies of any other country. There is no quarter of the globe where fire insurance may not be obtained from English offices. The insurance companies of other countries for the most part confine their operations to their own country, with the exception perhaps of Germany, the companies of which country have in later years also embarked in the world-wide business.

In the various kingdoms and provinces which now constitute the German Empire, as has been mentioned before, the various communal guilds had provided some crude form of insurance for their members, and in many places this function was transferred to the various municipalities as the guilds disappeared. One writer describes this process as follows: "As the absolute monarchical police-state constitutes the bridge between the middle ages and modern times, so too the transition from the mediaeval guild plan of mutual help to the

modern system was bridged by state insurance. The guilds of the middle ages lost their importance and private industry was not rapid enough to supply the void left by them, and so the state was forced to step into the breach."*

Such public fire insurance outside of Germany is still to be found in German-Austria, Denmark, Switzerland and Scandinavia. At a comparatively recent date about 40 per cent. of the outstanding insurance in Germany was carried by the institutions conducted by the government or by various municipalities. Throughout Germany and Switzerland to-day all buildings of ordinary occupancy are assured by the government as soon as built. Each owner is assessed pro rata, according to the appraised value of his own insured buildings, for the losses within the state. Money payments are not made by the state in event of loss, but the damage is repaired or the building replaced by the government. The necessity for insurance on other classes of property than buildings caused the formation of the first stock company in Germany in 1812, since which time many companies, both stock and mutual, have arisen, also various local associations similar to the old guilds and perhaps descendants from them.

X In France, while various insurance companies were set on foot during the second and third quarters of the eighteenth century, all perished during the general financial collapse which accompanied the French Revolution. The first regular stock company organized thereafter seems to date from 1818.

In other European countries fire insurance seems to have had even a later development—thus in Austria the first stock company was organized in 1822, and the first mutual company in 1825. In Russia the first company appeared in 1827.

In all civilized countries there are now fire insurance companies, even in China.

* J. S. Bloomington, Ph.D., "Fire Insurance."

Methods and plans vary in different parts of Europe. In France, under the Code Napoleon, every individual is liable for loss or damage which may happen to others through his fault. In case of fire the law holds that the fault rests with the tenant or owner on whose premises the fire originates, unless he can prove himself without fault; in other words, the burden of proof is on him. Hence a tenant, for example, takes out insurance first on his own personal property; second, to protect him against possible claims to be made by his landlord, and third, to protect him against possible liability to his neighbors for damages resulting from fires attributable or attributed to his carelessness or negligence. It would be highly instructive to more completely compare the varying conditions and methods under and by means of which the business of fire insurance is conducted in different parts of the world, but we cannot attempt it here.

In the city of Philadelphia, where fire insurance was first practiced in this country, there were in 1752 seven fire companies with two hundred and twenty-five members, seven engines, thirty-six ladders and ten hundred and fifty-five buckets. Yet despite the frequent fires which were responsible for the organization of these companies, no method of safe-guarding individual interests by means of fire insurance seems to have existed. It is a curious fact, worth noting, in passing, that until 1870 Philadelphia was dependent upon private organizations for the extinction of fires. The volunteer fire companies were succeeded by a paid fire department in that year.

On April 13, 1752, certain subscribers or contributors, among whom was Benjamin Franklin, organized under a deed of settlement the "Philadelphia Contributionship" for the insurance of houses from loss by fire. The first policy was issued June 1st of that year. This institution was closely

modeled after the English contributionships, and even adopted the house badge of one of the leading English societies. Its early contracts provided for a fixed deposit from every assured, according to the amount of insurance carried and the nature of the building insured.

Policies were issued for seven years, and the theory was that the interest on the accumulated funds would pay for losses and expenses, so that at the expiration of seven years the deposit could be returned intact to the assured. Nevertheless, the deposit itself was liable for the payment of losses and expenses should the income from investments prove to be insufficient. No liability seems to have been incurred by the contributors beyond the amount of the deposit and provision was made in case of overwhelming conflagration for a pro rata division of the assets as a complete liquidation of claims. When the interest earnings exceeded the losses and expenses, a dividend was to be allowed to contributors.

As the institution gained experience it was found necessary to abandon the division of profits, which, after March, 1763, were allowed to accumulate, thus forming a permanent fund for the payment of losses and expenses.

"Such," to quote the historian Fowler, "was the first enunciation in America of the great principle of insurance-accumulation," for it will be remembered the original plan did not contemplate a permanent fund. On the contrary, the deposits and surplus income derived therefrom, if any after payment of losses and expenses, were all to be returned to the contributors.

The company survived the trials of the Revolutionary War, including the financial stringency and depreciated currency which resulted therefrom, and has continued to exist and prosper to the present day. In 1902 its interest and dividends, wisely invested, had accumulated to the amount of over four

millions of dollars. It still continues to insure only brick buildings, and its insurance transactions to-day are very limited, the income during the past year from this source being but \$11,000. It now issues exclusively what are known as perpetual policies, which will be later described.

A curious event in the history of this company was responsible for the second and similar company in Philadelphia. Possibly because, as was claimed, the house of a contributor was set on fire by an adjacent shade tree but more probably because of the difficulties experienced in throwing water on or placing ladders against houses closely surrounded by trees, the society in 1782 resolved to thereafter prohibit the insurance of houses "having a tree or trees planted before them." Indeed, this hazard was for a time considered to be so serious that a law forbidding the planting of shade trees in streets and lanes and providing for the removal of those already so planted was passed by the Pennsylvania Legislature. This law, however, did not last but a year. As a result of this prohibition a new company was organized by "a great number of citizens of Philadelphia, who . . . have found it convenient and agreeable to them to have trees planted in the streets before their houses." The new company was modeled very closely after the senior organization except that an extra deposit was required for insuring houses having trees planted adjacent to them. It was called the Mutual Assurance Company for insuring houses from loss by fire, though it was commonly called "The Green Tree" from the house mark which it adopted. It also had a prosperous career, which still endures.

Other mutual companies and contributionships were organized in New York in 1787; in Maryland in 1794; in Virginia and Connecticut in 1794, and in Massachusetts in 1795,—several of which still exist.

So far as can be ascertained, the first fire insurance policies issued in America, other than those of the mutual companies, were issued in Hartford, Connecticut, in 1794, by a firm styled Sanford & Wadsworth, on behalf of what seems to have been a partnership or voluntary association, called the Hartford Fire Insurance Company. This company issued contracts of indemnity for a fixed premium, with no liability on the part of the insured, and counted among its members some of the wealthiest and most prominent citizens of the State. Two policies of this company are still extant. Little is known of its history. None of its records are preserved, but the fact that the names of several of the original partners appear as subscribers to the capital stock of the incorporated stock company now known as The Hartford Fire Insurance Company, which was incorporated in 1810, would seem to indicate that the latter was an outgrowth of the original partnership.

In 1794, also, the first incorporated stock company made its appearance. It was called The Insurance Company of North America, and, in addition to marine business, for the transaction of which it was chiefly organized, soon took up the business of fire insurance. The same company also issued the first policies insuring merchandise in America in the same year, 1794. This company still exists after a long, honorable, and successful career, and still continues to be an important factor in both fire and marine insurance affairs.

Another Philadelphia stock company, The Insurance Company of the State of Pennsylvania, was also organized in 1794.

In all, about ten mutual and four stock companies and partnerships transacted business in the United States prior to 1800. In 1820 there were seventeen stock companies in New York City alone, six in Pennsylvania, two in Connecticut, one in Rhode Island, one in New Jersey, and one in Massachusetts, of which twelve still continue in business, viz., five

in Pennsylvania, two in New York, two in Connecticut, and one each in New Jersey, Massachusetts and Rhode Island.

The first foreign company to do business in America was the Phoenix Fire Insurance Company of London, in 1806, followed in 1807 by the Pelican Fire Insurance Company of London.

Almost immediately efforts were made to prohibit by law the operation of foreign companies, and, after several attempts, laws were passed in New York State and in Pennsylvania in 1810 and 1814, respectively, forbidding such companies to transact business. However, after the conflagration of 1835, the dearth of insurance capital brought about the repeal of these laws. Nor have foreign companies since that time been seriously molested.

The data and experience tables by means of which the business of fire insurance might be wisely conducted, are very imperfect to this day. At the beginning of the nineteenth century and during the early part of it, they were practically non-existent, and, as has been well said, the business was purely an empiricism. Forms of contracts were copied from those in use abroad and rates of premium were also frequently so copied, but more often were based upon crude assumptions concerning the hazards inherent to the construction, occupancy, or exposure of the buildings insured. The fact that shade trees were considered to create an almost prohibitive "jeopardy," while the liability on buildings with such dangerous occupants as distillers was assumed at very low rates of premium, is an indication how blindly the early insurers groped for proper rules or methods. Little or no attention was paid to the amounts which any particular company might properly carry on a single risk or in a given area. It is true an advance in the rate of premium was sometimes made, when large amounts of insurance were desired, but the law of

average and the necessity for a proper distribution of liability were subjects of little or no concern to the companies that first undertook to furnish indemnity for loss by fire in this country. In some cases practically the entire assets of a company were risked in one contract, and it was common to put out single policies for amounts far in excess of the annual income of the company issuing them. It followed, as a matter of course, that the early history of the business was full of vicissitudes, surprises and disasters, and the persistency of some of the older companies under such conditions is not the least noteworthy fact of their early history. It was but a natural and inevitable result of such conditions that every brief period of success should be followed by reckless competition for business. Since company officials had little or no knowledge of the fire cost of any class, the danger of low prices was not apparent. These conditions, it may be said in passing, have not been to this day by any means wholly cured, as will be seen later. Moreover, the fact that fire insurance contracts are almost always made for comparatively short terms—in the great majority of cases for one year—has always tended and still tends to encourage reckless underwriting. Companies frequently take on business at rates known to be inadequate, and excuse such action to themselves by the assumption that the contracts so obtained will be renewed at expiration at adequate rates—an assumption by no means always justified by facts.

Early in the century, the Insurance Company of North America began to extend its business to wider fields and, indeed, as early as 1807 the President was authorized "to appoint suitable and trusty persons at such places as he shall think advisable, to act as surveyors and agents of the company." Accordingly, agents were promptly appointed in Pennsylvania, New Jersey, Ohio, Tennessee, Kentucky and else-

where. This was probably the beginning of the American system of fire insurance through agencies, which has grown to enormous proportions; to such an extent, in fact, that there is hardly a town, village or hamlet in the United States so small that some agent or solicitor of a fire insurance company cannot be found in it.

The agency system brought about competition among companies of different States, which caused in Pennsylvania the passage of a law in 1829 prohibiting all companies of other States from doing business therein. Outside companies, however, were re-admitted in 1849, and other States did not take similar restrictive action.

Concerning the volume of business transacted, the number of companies operating, and the general results attending the business of fire insurance in the United States prior to 1850, there is little reliable or exact information available.

By 1835 there were twenty-six local stock companies in New York City, besides others located at interior points and a considerable number in other States; also a large number of mutual companies doing, for the most part, a purely local business. In December of that year came the first great conflagration and destroyed property to the value of twenty million dollars in New York City. Of the twenty-six local companies, all but three were bankrupted; also a large proportion of the companies from other States doing business in New York. Two results followed from this fire: first, people distrusted the local companies with their congested liability; second, capital could not readily be found to start new stock companies, hence people looked to mutual associations for protection and many such were formed and took on large liabilities in the city. But in 1845 another conflagration occurred in New York which destroyed, virtually, all the mutuals doing any considerable business in the city

and a large proportion of the re-organized or new stock companies. The necessity for the broad and stable foundation afforded by a widely distributed liability had not yet been learned.

The business of fire insurance as a whole was greatly demoralized by these and subsequent smaller conflagrations in Pittsburg, Philadelphia and St. Louis, and, in the absence of proper regulating laws, became the favorite field for the exploits of deliberate swindlers and visionary gamesters. So that for some years after 1845 vast numbers of irresponsible concerns, short-lived for the most part, flourished and failed; while the few older surviving stock companies, though sorely beset at times, gradually secured a firmer hold of the business of the country and extended their agencies throughout the United States. Gradually, too, more favorable conditions as to fires in New York City obtaining, local stock and State mutual companies sprang up there and flourished. The first New York State Official Report, issued in 1853, shows sixty-five New York State stock companies; seventy-four New York State mutual companies; twenty-two stock companies of other States, seven mutual companies of other States, and three foreign companies, all doing business in New York. By this time local stock and mutual companies had been organized in all parts of the United States.

The Civil War at first depressed the business of insurance, with all other business, but during the period of inflation which followed and despite the warning of a ten million dollar conflagration in 1866 at Portland, Maine, by which many companies were ruined or temporarily disabled, the business was pursued under conditions of reckless competition, and companies were organized in great numbers. It is said that nearly four hundred charters were taken out in the years 1866 to 1869 inclusive.

In October, 1871, came the great Chicago fire, which endured three days, and destroyed property variously estimated to be worth from one hundred and twenty-five to one hundred and sixty-five millions. By this fire sixty-eight companies were ruined. The losses incurred by insurance companies amounted to \$91,300,000, of which about 52 per cent., or \$50,100,000 was paid, leaving the balance of \$41,000,000, which the sixty-eight bankrupt companies were unable to make good and which, therefore, fell on property owners, who also had to bear the loss of property worth about \$60,000,000, not covered by insurance of any kind. The unwisdom of relying upon the promises of indemnity offered by companies doing business in a restricted field is shown by the fact that, of twenty-two Illinois companies, seventeen were put out of existence by this fire and Illinois companies as a whole paid but 15 per cent. of their losses. At the same time more than fifty Eastern companies paid the entire amount of their losses, as did the six foreign companies who were at that time operating in the United States. Nearly one-third of the entire amount of insurance in the burnt district of Chicago was carried by Illinois companies, very few of which transacted a widely distributed business.

Hardly had the surviving companies collected from their stockholders the assessments made necessary by the Chicago fire, when, one year later, occurred the Boston conflagration, which caused claims of \$56,000,000 more to be made upon them. Fifty companies were bankrupted by this fire, including twenty-two Massachusetts companies.

Since 1872 there have been no conflagrations which have seriously affected any considerable number of companies, and, owing largely to the knowledge born of the bitter experiences of those two disastrous years and to a steadily growing appreciation of the fundamental principles of underwriting, con-

ditions as to stability and strength sufficient to meet sudden abnormal demands have, on the whole, greatly improved.

It is true there are still a very large number of weak companies and every period of prosperity witnesses the appearance of a large number of new enterprises, most of which do not survive the inevitable period of unprofitableness which follows. Ruinous, widespread competition in prices has been avoided, though scattered disturbances are of constant occurrence, as must always be the case, no doubt, in a business where to the ordinary and severe competition of well ordered and fairly conservative companies is, in every season of prosperity, added the unreasonable and unintelligent competition of the temporary companies just mentioned, and where the natural competitive tendency toward the shading of adequate prices is stimulated by the efforts of legislators and the public, who, because they believe the rates charged by fire insurance companies to be arbitrarily fixed, instead of infallibly controlled by the rate at which property is destroyed by fire, endeavor to prevent all efforts looking toward the establishment and maintenance of rates proper and necessary alike for the protection of insured property owners and stockholders of insurance companies. Nevertheless, the business to-day is characterized by a solidity of assets, strength of reserve, distribution of liability and widely scattered sources of income never before known in its history, and each year the companies successfully meet demands for losses larger than those made by the conflagrations of Chicago and Boston. For instance, in the year 1902, insurance companies paid losses amounting to nearly three times those paid in settlement of claims arising from the great Chicago fire.

The rapid and enormous accumulation of wealth, largely invested in destructible property, and the tremendous fire waste, which has made comparatively high rates necessary,

have combined to make the United States easily the world's leader in the volume of premiums annually collected and in the number and variety of institutions which compete for the business. The volume of business transacted by insurance companies has kept pace with the material and commercial growth of the country. Early statistics are not available, but from 1860 the results of the business of the stock companies reporting to the Insurance Department of the State of New York, and these may fairly be held to include all companies except those doing a purely local business, have been carefully tabulated and show the following results:

Year.	No. of Cos.	Assets.	Amount at Risk.	Premiums.	Losses.
1860	132	\$ 44,272,196	\$ 1,379,818,274	\$ 13,407,701	\$ 8,460,469
1870	173	94,869,589	4,509,617,329	43,237,521	25,619,430
1880	153	145,619,359	7,102,706,955	53,899,092	29,772,356
1890	148	222,478,122	13,558,569,954	105,255,417	58,117,399
1902	145	340,397,418	23,287,035,900	196,246,018	94,176,592

The business, as a whole, has probably been done at a loss, the failures far exceeding the successes in number. As above stated, the records of the first half of the century are incomplete. The following quotation from the Report of a Committee of Underwriters who were appointed partly for the purpose of investigating the results of business in 1850, may be taken as being the most reliable statement of results obtainable:

"The statistics of fire insurance in the United States will show that in the period of twenty years, commencing with 1811 and ending with 1830, it did not produce an average profit of 3 per cent. per annum on the capital employed.

"The business in the twenty years, commencing with 1831 and ending with 1850, exhibits a very discouraging result. The whole of the premiums received for the insurance of property in the United States, and in the provinces of British

North America during this period, and many millions of capital, were required to meet the losses. Many of the stock companies, and nearly all of the mutual companies, were ruined.

"The whole of the premiums received in Western New York, and in the Northwestern and Southwestern States, in the last ten years have not paid the losses by 25 per cent."

From 1860 to 1902 the record has been as follows:

Premiums	\$3,225,241,531
Losses	1,898,907,094
Expenses	1,199,473,333

from which it will be seen that losses and expenses have amounted to 58.87 per cent. and 35.12 per cent., respectively, of the premium receipts, leaving an apparent profit of 6 per cent. However, from this must be deducted the outstanding liabilities of companies as of December 31, 1902, amounting to \$176,765,002, so that the net result indicates an apparent profit of \$16,749,490, or about one-half of 1 per cent. on the total premium income.

The above figures, however, are complete as to surviving and existing companies only. If to their record could be added the completed figures of the companies who have failed or retired, the results of whose business are not now obtainable, the final accounting would be even less favorable. The total number of stock companies—American and foreign—now doing business and reporting to the New York State Insurance Department, is one hundred and forty-five. There have been, however, in the history of the business in the United States over sixteen hundred companies which have failed or retired, and of these companies about nine hundred were stock companies.

The amount of liability carried by fire insurance companies is enormous, exceeding that carried by the life insurance companies. The assets and income of fire insurance companies, however, are disproportionately small when compared with the figures of the life insurance companies.

This is because, first, the average premium collected by fire insurance companies is very much smaller than that collected by life insurance companies. Second, because fire insurance companies must accumulate reserves, not for a payment to be made under every contract, but—as experience shows—to only one out of thirty policy-holders, and then, on the average, only for a part of the amount insured.

THEORY OF FIRE INSURANCE

THE NATURE OF CONTRACTS—GENERAL INSTRUCTIONS

BY RICHARD M. BISSELL

{ The whole theory of fire insurance is logically derived from the axiom that insurance is a means of providing indemnity for loss. In the preceding lecture this principle as applied to the operations of fire insurance was illustrated as follows: }

“A fire insurance policy is a contract to indemnify the holder thereof for actual destruction, by a certain immediate cause, i. e., fire, of value appertaining to certain specified property owned by him.”)

The first thing to be noticed is that indemnity for actual loss sustained is the measure and limit of the duty or obligation of the insurance company, hence under no circumstances should the payments made by the company exceed such actual loss; that is, insurance should lead to no profit to the insured. A policy is, therefore, a limited contract, the limit being the actual loss sustained by the policy-holder, and is not properly a promise to pay a certain sum in the event of the destruction of the property insured. Failure to comprehend this basic principle is responsible for many of the misunderstandings which arise between companies and their patrons. At first sight nothing seems more reasonable or proper than that an insured should receive the full amount upon which he has paid a premium if his insured property is totally destroyed. The earliest contracts, indeed, provided that total payment should be made under such circumstances.

As a matter of fact many causes may operate to decrease or increase the actual value of property.

Where personal property is concerned the case is simple. Every one knows that stocks of merchandise, for instance, are constantly varying in value as goods are bought and sold, and while skilful merchants endeavor to keep some fairly constant ratio between the value of their goods and the amount of insurance they carry on same, yet this ratio unavoidably varies, and it very frequently happens when fire occurs that the amount of insurance is found to be larger than the value of the property covered. Furthermore, there are a great number of merchants and manufacturers who do not keep their books and accounts in such a way as to actually set forth the value of what they may have on hand at a given time. The science of expert accounting has made great strides in this country within the past few years, but accurate and scientific inventories and records are by no means universal, hence, frequently, the careful investigations, which are a part of every loss settlement, reveal a condition of affairs as to values and quantities which are quite unexpected by the property owner. People commonly recognize this possibility of over-insurance where personal property is concerned. Though attempts have been made in several States to pass laws requiring the full amount of policies to be paid in event of total destruction by fire of personal property covered by insurance, no such law is in force.

Where buildings are concerned the case is not so simple. It is hard to persuade the average man that he is not entitled "to the amount his policy calls for," as the saying is, when his building is totally destroyed. Indeed, many men of intelligence believe that he is so entitled—probably the majority of people in many sections of the country. Yet the values of buildings are by no means stable. A building costing

\$10,000, and built at a time when labor and material are at high prices, may be worth much less a few years later when these commodities are at low prices and when the building itself has depreciated from use and lack of proper repair. Again, a building not well designed for its proposed occupancy, or, through bad judgment, so located as to be useless for the purposes for which it was intended, may become practically worthless—without value. Every city, almost every village, contains such buildings. So that the insurance carried, which was taken out in good faith, may, when the fire comes, exceed the value of the building. No fewer than twenty-one States have laws providing that where the insured building is totally destroyed by fire the insurance companies shall in every case pay the full amount of their policies, unless, of course, the contract has been in some way invalidated. Nor in such States are companies allowed to present any evidence tending to prove a smaller value than the amount of insurance. Hence such laws are called "Valued Policy" laws—because policies affected by them are "valued"—i. e., the value of the property insured is fixed by the contract and cannot be disputed. The thought ordinarily back of such laws seems to be something like this: The insurance company has accepted premiums on a certain amount, thereby recognizing the value of the property to be at least as much as the insurance, for no company wants to insure property for more than its worth; therefore, having accepted the premium on, say \$1,000, and having carried that amount of insurance on a building for several years, it is unjust for a company to claim, after a fire, that the building was worth only \$800 and that the insured has lost and is entitled to recover that amount only. It must be remembered, however, that the information upon which the amount of the insurance was based came from the insured. He furnished the data for this purpose, which ordinarily

the insurance company has not actually verified. Were it practicable and advisable for insurance companies to accurately and rigidly determine the value of every piece of property which is insured, and were that value (once ascertained) fixed and not subject to fluctuation, it might with some justice be held that an insured, in the event of the total destruction of the property covered, was entitled to receive the total amount for which his policy had been issued. But values are not stable, neither could such investigations be made by companies without an expense which would excessively increase the cost of insurance. Nor as a matter of fact are they necessary.

A calculation based upon the experience of some 350,000 policies indicates that about one policy in thirty results in a claim, large or small. Of these claims not over 10 per cent. are for total losses so far as the policies are concerned, and a considerably smaller percentage of course, so far as the property is concerned. Therefore, we may assume that, of 100,000 buildings of all kinds insured, not more than 3,333 suffer loss and not to exceed 333 are totally destroyed, hence only under 333 out of 100,000 contracts can the question arise whether the value is less than the insurance. To actually determine in advance the value of the entire 100,000 buildings would cost probably more than the losses arising from them, and, of course, this additional cost would have to be added to the price paid by the property owner for his insurance. Moreover, since insurance policies are usually issued for short terms, and since buildings undergo frequent changes from various causes, this extra cost would have to be met every time the insurance was transferred from one company to another, and every time for any reason the value of the buildings suffered change. On the other hand, the cost of fixing the value on the 333 buildings totally destroyed is, comparatively speaking, insignificant. Furthermore, the owner of

the property is supposed to know and ought to know the value of his building, and since all fire insurance contracts are based on good faith, companies have a reasonable ground for relying on the statements of the owner when issuing policies, and should not in equity be compelled to make a payment which by causing a profit to the insured violates one of the fundamental principles on which the business is founded, even though they may have been led by the statements of the owner to issue a policy for more than the actual worth of the property. Where valued policy laws have been passed they have resulted in disaster to the property owner. Since they make fraud easy by securing profit to those who secure policies in excess of the value of their property, they operate to largely increase the fire waste and therefore and inevitably increase rates. The case against such laws is vigorously stated by Hon. W. S. Matthews, formerly Superintendent of Insurance in the State of Ohio:

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"The objection to a valued policy law is that it ignores the fundamental principle of insurance, which is that of indemnity pure and simple, and compels the company to pay the full amount named in the policy, although the actual loss may be but one-half or two-thirds that amount. To put this construction upon the obligation of the insurance contract is to convert the whole scheme of insurance into a money-making and gambling transaction. It is a statute that may make it more profitable to destroy property than to keep it. It is a statute that places before every evil disposed person the temptation to over-insure and then burn his property for the gain there is in it. And even where the assured is honest, he is liable to be made more indifferent as to the care he should take of his property by over-insurance. Every property owner should at least carry some of the risk which attaches to property. It is not a statute in the interest of

honest policy-holders, but only in the interest of the dishonest man. The honest policy-holders of the State, therefore, lose in two ways on account of this law. First, because of the increased rate of insurance on account of the increased moral hazard superinduced by the valued policy law. And, second, because of the increased fire exposure on account of the incentive to burn or to be careless of excessively insured property. It is very evident that if valued policy laws increase the fire loss, they must necessarily increase rates of insurance, for rates increase or decrease in proportion to the increase or decrease of fire loss. The only protection a company has against adverse conditions, whether in legislation or society, is the adjustment of rates. The extra loss to companies on account of the valued policy law is certainly shifted from them on to the honest policy-holders of the State. The policy-holders, therefore, are the ones to pay these extra losses, and instead of this law being a benefit to them it is an expensive and costly experiment. I can conceive of nothing that the State, in its legislative capacity, can do, more dangerous to the prosperity of the State, and to public morals, than to pass a law that invites wilful and malicious destruction of property, or encourages carelessness in the care of property."

There is, of course, some cause for the passage of such laws. They have been passed usually in States where the farmer class predominate, and in most cases at the request of farmers.

There was a time when the insurance of farm property was eagerly sought after by insurance companies. It afforded the largest class of safely distributed and, apparently, least hazardous class of property in the market. It is unfortunately true that some insurance companies (not a large number) habitually urged farmers to take out policies for as large amounts as they could be persuaded to purchase, the companies rely-

ing upon the law to keep the claims down to actual values. When a loss occurred under such a policy the indignation of the farmer was aroused and as a remedy and safeguard he secured the passage of a valued policy law. Insurance companies and, incidentally, the public are suffering because of the faults of a few of their number, but this fact does not interfere with the truth of the statement that such laws are vicious in that they encourage and legalize fraud by making it possible for the insured to derive a profit from the destruction of his property; unjust since they victimize insurance companies, and extravagant and wasteful since they have been conclusively proven to have increased the fire waste and the cost of fire insurance in the States where they are enforced. The history of their operation clearly shows that they help none but the fraudulent or unreasonable claimant, while they bring serious financial loss to the insurance companies and insuring public as well. Such a law was passed by the Legislature of Iowa in 1900. In his message vetoing the law, Governor Shaw, now Secretary of the Treasury, gave perhaps the clearest and most convincing indictment of it that has yet been penned. A study of that document is highly recommended. ✓

The next thing to be noticed in our definition is that there must be actual destruction of material value, and that the liability of the company is only for such material value; that is, value which can be measured in money or other commodities. Usually this is called the fair cash market value of the property affected, being the actual value at time of fire. This principle is also very important and not always clearly apprehended. It puts out of the reckoning any sentimental value, such as pertains, for instance, to heirlooms, gifts, family portraits, documents, etc., and limits the claims which there may be made on account of the loss of such articles to a fair cash market or exchange value. It is manifest that to the ✓

individual owner a family portrait or heirloom may be of inestimable value, even though the painting may be a bad one, or the heirloom useless and ugly. Such values, however, are not inherent in the articles themselves, but rather spring from the history of them. They cannot be measured in dollars and hence are not proper subjects for insurance.

The value which is contemplated by an insurance policy may perhaps be best shown by a few examples. The value of a building is what it would cost to reinstate it in the same condition as before the fire, subject to a reasonable deduction for depreciation from use or neglect. The value of the manufacturer's goods is made up of the cost of his raw material at the time of the fire, plus transportation charges and cost of manufacture. The value of his machinery could be measured by what it would cost at the time of the fire to purchase and set up machines similar to those destroyed, with a suitable deduction for the difference in value between old and new machinery. The list might be prolonged indefinitely, but the above examples will suffice.

It will be seen that the value is limited by the cost of replacement at the time of fire. This may be more or less than the original cost to the owner. If a grain dealer buys wheat at 70 cents per bushel, and his storehouse burns at a time when a similar grade of wheat commands a price of 90 cents per bushel in the open market, then 90 cents per bushel is the limit of his claim. If, on the contrary, the price has fallen to 50 cents per bushel, that is the limit. So, also, the value of a building increases and decreases with the cost of labor and material. In many cases, in fact in most cases, some deduction from the market cost must be made for depreciation in arriving at present values. This subject of depreciation is the cause of much dispute in the settlement of losses. All things depreciate. Some, like fire-proof build-

ings, very slowly; others, such as perishable commodities, and delicate and frail articles, very rapidly. Complicated, delicate and fast-running machinery furnishes a good example. For instance, automobiles and threshing machines. These are high priced and receive hard usage, and their value vanishes rapidly. An automobile which is three years old has lost a large part of its value, and a threshing machine five years old is practically valueless. Depreciation from use simply means that things wear out.

But there are other kinds of depreciation. Change of fashions is a most effective depreciator. Who will at Easter time this year attribute any particular value to a last year's Easter bonnet? Fire cannot destroy its fair cash value, for the mandate of Parisian fashions has obliterated that. ✓

Changes in processes often destroy or lessen the value of machinery. Old-fashioned nail machines and old-fashioned flour mill machinery have no present value; they have been thrown on the rubbish heap or the scrap pile by all progressive manufacturers.

The next thing to be noticed is that only actual immediate damage is covered by insurance; that is, damage which is attributable directly to the fire, or which is the immediate result of fire. Thus a fire insurance company insuring a stock of merchandise would in case of loss be liable for the value of the property actually consumed, and also damage to the remaining property caused by fire, smoke and the process of extinguishing the fire. It would not be liable, however, for any loss caused by the interruption or derangement of business and consequent loss of profit.

An insurance policy is a personal contract. It does not follow the property, nor, properly speaking, insure it at all, though the language of the day gives a contrary impression. It is an agreement to indemnify a policy-holder for the

loss accruing to him personally by reason of the destruction or damage of certain property. Accordingly, no person who is not the owner of the property burned, or who has no interest in it, can be a claimant against an insurance company. Nor can an owner make claim on account of any other property than that directly mentioned or logically implied in the policy itself. All policies, therefore, should clearly set forth the description of the property to be insured and the interest of the policy-holder therein. While no one can insure property unless he has a valuable interest therein, any kind of an interest which can be valued in cash may be insured. Accordingly, a man who loans money on a building acquires an interest in it, and he may insure that interest, either separately, or, as is the custom, in conjunction with the owner of the building, both interests being covered by one contract. A purchaser who has paid in part for property which he may not receive until full payment is made, acquires an interest which may be protected by insurance. A life interest in property, also the reversionary interest of the final legatee, may be insured. In fact, any tangible, valuable interest in any kind of property may be made the subject of an insurance policy. It is a maxim of the business, however, that the value of all such interests must not exceed the actual cash value of the property itself.

In addition to the interests already mentioned, it is possible to insure against the loss of almost any ascertainable value which is subject to obliteration or depreciation by fire. Thus, the rental income of a building may be insured by a contract which will make good the loss of rent during the time the building is rendered untenable by fire. So, also, in certain cases, what is called the use and occupancy of a manufacturing plant; that is to say, its ability to turn out the appropriate finished product in regular quantities, may be insured against interruptions by fire.

The property to be insured must be definitely described. A policy so written as to cover a stock of boots and shoes will not also cover dry goods, nor will a policy insuring a building also insure outbuildings or awnings. The written description forming part of every policy must either specifically mention everything to be insured, or must be couched in such broad terms as to include everything for which protection is desired. Thus a contract insuring merchandise would protect everything kept for sale, the word "merchandise" being very broad in its connotation; whereas a contract, as above, insuring a stock of boots and shoes, would cover nothing else.

In order to appreciate the relations which exist between a fire insurance company and the insured we must bear in mind the following facts, which will also indicate the reasons for the carefully drawn and somewhat stringent contracts by which insurance is undertaken.

In the first place, property covered by insurance is not only for the most part in the custody of the insured, but is usually occupied, operated or handled by him. Moreover, and this is even more important, the information upon which the insurance is predicated is furnished by the insured, hence the obvious opportunities for fraud which the stringent policy conditions are intended to prevent—an intention which is only partially accomplished, as the experience of every company will demonstrate. In this connection a comment from a New York court will be appropriate:

"In negotiating a contract of insurance the parties are not upon a level, nor do they deal at arm's length. The insurer, i. e., the company, is presumed to be ignorant, and the insured informed in respect to the subject to be insured. Hence, in forming the contract, the insurer, except he undertake to inquire for himself, does not rely on his own resources, but reposes exclusively on the intelligence communicated by the

insured. And hence, further, the parties occupying this unequal position, the law exacts of the party holding the position of advantage—i. e., the insured—the utmost good faith and candor in communicating the facts affecting the risk."

Again, Mr. Hine, in his Book of Instruction, says:

"In no contract is one party more completely at the mercy of another than the underwriter, i. e. the company, in insurance. He is necessarily ignorant of facts and circumstances that may be vital to the risk and hence open to the fraud of designing men, who may withhold or misrepresent 'material' facts."

Some mention in the preceding lecture has already been made of the significant features of the earliest insurance contracts, or policies, as they began to be called somewhere about 1700, and did space permit, the history of the development of the fire insurance contract and its attendant clauses would well repay investigation and is recommended as an interesting and highly instructive topic for independent work for any who may care to pursue their studies. The present discussion, however, must be limited for the most part to contracts now in general use, and the history of the development which leads up to them cannot even be briefly indicated here beyond the statement that the simple and brief policies used in the early days of insurance history have expanded into the lengthy and complex documents now in general use by gradual process of development, the numerous changes embodying the results of the experience of the intervening years. Each new clause or provision has a history.

Copies of the earliest policies issued in this country are before you. One of them—that issued by the partnership known as the Hartford Fire Insurance Company—is extremely peculiar in its language and is, indeed, nothing more than a marine insurance policy somewhat clumsily adapted to the

uses of fire insurance. It is a modification of the policy issued in Holland and is commonly known as the "Amsterdam Policy." It is a very loosely drawn and imperfect paper. So far as known, it was never used in America save for a few years by the company above mentioned.

The other copies of ancient policies before you, i. e. those of the Philadelphia Contributionship, Mutual Assurance Company of Philadelphia, and the Insurance Company of North America, resemble one another closely and are closely modeled after the English policies in use when insurance began to be practiced in this country. These policies contained few provisions and were quite simply worded. As a matter of fact, they failed to provide for any of the contingencies likely to arise during the settlement of a loss, nor did they by any means clearly define and limit the rights and the responsibilities of the contracting parties.

While most of the policies issued during the early years of the nineteenth century were similar, yet divergencies arose at a comparatively early date owing to changes and additions which resulted from the varying experiences and theories of different underwriters. These differences were increased by the efforts of those companies who strove to gain favor by attractive forms of contracts, also by those who endeavored, by cunningly worded and over-stringent forms, to prepare pretexts by which the payment of losses claimed might be avoided. This latter practice has even to this day characterized many contracts made attractive at first sight by their low prices. The swindler in fire insurance, as in other lines of business, endeavors to market worthless wares by quoting prices below those at which valuable and reliable articles can be secured. Since it usually happens that more than one company carries insurance on the same property, the difference in forms of contracts above referred to often produced dispute and con-

fusion when claims arose under them. Until 1867, however, no great degree of uniformity was attempted. The various insurance centers, such as Boston, Hartford, New York, Philadelphia and New Orleans, each had its characteristic form, some companies doing a widely extended business using various forms in different parts of the country.

In 1867 and 1868 the National Board of Underwriters, an organization comprising most of the leading fire insurance companies of the country, and which has had a very important influence upon the development of the fire insurance business, devised and adopted a form of contract or policy designed to be universally used. However, few companies outside of the city of New York adopted the form in its entirety, and the annoyance to which the public were subjected by the varying kinds of contracts brought about in 1873, in the State of Massachusetts, a law providing for a standard form of policy, and in 1880 the Massachusetts standard policy was made obligatory upon all companies operating in that State.

In 1886 the State of New York also adopted a standard form of policy which became mandatory January 15, 1887. This policy was devised by the superintendent of insurance in consultation with various eminent insurance officials and organizations. It was carefully prepared and is, on the whole, while not altogether beyond criticism, the most useful and satisfactory fire insurance contract yet brought into anything like general use. It has been made mandatory by seven other States, and is commonly used by all insurance companies doing a widely extended business throughout the United States wherever the laws of individual States do not forbid.

Other forms of standard policies have been adopted by the States of Maine, Massachusetts, New Hampshire, Michigan, Missouri, Virginia and Wisconsin, but are all inferior to the New York form, which we will accordingly adopt as the

basis of our discussion.* The standard policy is a form with the conditions and stipulations printed in a certain size type prescribed by law so that it may be plainly read. Every thing is prescribed by law except the premium, the term, date and amount. A space is left for the proper description of the particular piece of property to be insured.

The first part of the contract, below the name of the company, is the statement of the consideration. Policies, like most other contracts, are not valid without a valuable consideration. The important thing to notice here is that not only the premium paid, but also the printed stipulations of the policy are a part of this consideration. Next follows the name of the person or corporation to whom the contract is issued. Then the beginning, duration, and ending of the period for which the contract is to run are clearly stated. You will note that the contracts begin and end at noon. For some reasons it would be more convenient to have a later hour than 12 o'clock, so that the policies might end at the close of a complete business day. Whether the language used means the solar noon, i. e., the moment when the sun crosses the meridian, or 12 o'clock according to the standard time at the particular place where the policy covers, is not yet definitely settled by the courts. Next, the policy limits the amount for which the company may be liable. Then comes a clause limiting the application of the policy to the property described while in the location mentioned in the policy only. Needless to say, the contract is made and the rate of premium fixed according to the hazard of the location of the property when insured, hence the policy must be confined to that location, unless altered by a new agreement between the parties to it. Next follows a space for the description of the property to be insured; also for a description of

* A copy of the printed conditions of the New York Standard policy will be found at the back of the book.

its location and for any additional permits, stipulations or agreements (such as a permit allowing other insurance, or for the use of gasoline, etc.), which may be agreed upon by the company and the policy-holder, which additional agreements, however, must not be in conflict with the mandatory legal conditions of the policy. After the description follow six lines which define, briefly and fully, the liability of the company and the method for settlement and payment of losses. The first two lines have already been anticipated and do not need further comment. Lines 3 to 6 refer to the "loss settlement" and will be touched upon in a subsequent lecture.

We now come to what are commonly called the conditions of the policy.

Lines 7 to 10 provide for the forfeiture of the policy by misleading or fraudulent acts or by concealment of material facts on the part of the assured. The policy is based upon the representations and statements of the insured and therefore it is but fair that the company should not be bound in a case where its contract has been secured by false statements, or because of the suppression or concealment of some material fact affecting the hazard. Most of the provisions in these lines refer to the negotiations attending the issuance of the policy.

Lines 11 to 30 render a policy, which may have been valid during a part of its term, void in case, during its life, some act of the assured or within his knowledge operates to materially alter the conditions of the property insured as to hazard or ownership. Since the contract is a personal one it is obvious that a change in ownership makes it of no effect. Furthermore, the contract was made in view of the hazards existing at the time of its issuance and was determined in several important respects by those circumstances, hence a material increase of hazard cannot be assumed without a re-arrangement of the contract—generally as to price, but also

often as to the amount which the company is willing to carry. Some of the hazards mentioned in these lines, such as vacancy, generating of gas, storage of fire works, etc., are so dangerous that most companies will not assume or continue liability where they exist. All of the changes mentioned in these lines are considered to affect the hazards involved. It will be noticed that the saving clause "unless otherwise provided by agreement indorsed hereon or added hereto" makes it possible to alter an existing contract so as to permit any or all of the changes mentioned in the lines under consideration, i. e., lines 11 to 30, and as a matter of fact almost every policy does permit one or more of the hazards or changes prohibited in these lines.

Lines 31 to 32½ exempt the company from liability on account of fires caused by war, riot, or public authority. Such losses for the most part can be recovered from the municipality, and insurance would be a double compensation. Moreover, such losses are by their nature extraordinary and unavoidable under prevailing conditions. Even the apparatus for extinguishing fire, the presence of which may largely have reduced the price, cannot be used.

Lines 32½ to 35 in part exempt the company from losses which may be concurrent with a fire loss, but are not losses by fire itself. If the assured remove his goods endangered by fire to a place of safety, it is no more the province of the insurance company to protect them from theft than before. Often companies do pay for stolen articles, but only because it cannot always be determined whether these were burnt or purloined. So, too, when an explosion, as, for instance, of a boiler, is followed by fire, the company can be held for loss caused by fire only, and must be relieved from claims on account of any damage shown to have been caused by the explosion. The clause freeing companies from liability when an assured has failed to use reasonable means to save the

property is rarely effective. The burden of proof is upon the company in such case, and it is practically impossible to establish beyond a doubt that the loss or damage was brought about by the assured's neglect to use reasonable means to preserve and save the property.

Lines 36 and 37: When a building falls as the result of weakened foundations, or is overthrown by a wind storm, or some other cause, the fire insurance covering it instantly ceases for the reason that such a building at once loses its value and becomes a heap of débris. Fires usually start in such cases from some overthrown lamp or stove, but the fire burns only the débris of a building already destroyed,—not the building itself.

Line 38 provides that certain articles not as a rule inherently valuable, but being the evidence of value, shall not be insured. Money and securities are also included in this list. These articles afford such opportunities for fraud, can be so easily concealed, and the amount of them is so impossible to determine except from the statement of the insured, that to insure them would put the company so absolutely at the mercy of the claimant that companies have never been willing to assume liability on them.

Lines 39 to 41½ refer to articles concerning which there might be some dispute as to the application of a policy couched in general terms, or concerning the value of which a difference of opinion might readily arise, and, in general, articles of a class which companies will not willingly insure unless under exceptional conditions. Hence it is provided that, in order that these be included within the scope of a policy, they must be specifically mentioned. They are by no means prohibited from insurance; in fact, they are very commonly insured.

The last of line 41 and line 42 merely express certain truths involved in the caption of the policy by the words "direct loss or damage by fire."

Line 43 is intended simply to put the several companies who may happen to insure the same building under different forms of contracts on an equality as to certain very perishable items.

Lines 45 and 46 merely emphasize lines 7 to 9 as to certain written statements made by the assured or assented to by him prior to the issuance of policy.

Lines 47 and 48 are inserted for the protection of the companies, because, under the common law, an insurance contract may be affected or altered by verbal agreement, and because many of the details between agents and insurers must be handled by clerks. A clerk or a middleman may deliver a policy, collect the premium for the agent of the company, or even take an order for him, but cannot act as authoritative agent of the company unless so empowered by the company in writing. Many times claims for special terms, privileges, etc., are based on alleged verbal promises of clerks or middlemen.

Lines 49 and 50 simply enforce the conditions embraced in lines 7 to 30 as to a policy renewed. In other words, they renew the obligation of the assured, as well as that of the company.

Lines 51 to 55 permit either party to the contract to terminate it. In case the company so elects, the assured is allowed five days in which to secure other insurance. When the assured chooses to cancel, the company is permitted to retain more than the proportional fractional part of the original premium; that is, in case of a one year policy canceled at six months by the assured the company is allowed to retain slightly more than one-half of the premium. This is because the company is compelled to expend a considerable part of every premium received in handling the record of the contract so as to comply with the law, and in other ways to

consume at the outset a part of each premium in fixed charges. If it is terminated prior to maturity by the assured, the law holds the company to be fairly entitled to recover those fixed charges. If the company chooses to cancel, however, these charges are lost and the assured receives full return premium according to the time which the policy has run. Hence, contracts are seldom terminated by companies without good cause.

Lines 56 to 59 refer exclusively to mortgage interests, and provide that, as to such interest, companies may alter the policy conditions as they see fit. There is some plausible reason for this, since mortgages based upon the value of destructible property must be protected and it is also necessary that such protection shall not be jeopardized by some improper action of the borrower, i. e., the property owner.

Lines 60 and 65 simply provide that the efforts of the assured to save his property from destruction by removing it from danger shall not result to his harm. Ordinarily a removal without the consent of the company vitiates the policy and lines 60 to 65 simply make an exception to this rule.

Lines 67 to 95 refer to the procedure in settlement of losses and will be treated in the future lecture to be given on that subject.

Lines 96 to 97¾ are very important. They provide for the distribution of loss among the various companies insuring identical property according to the amount which each company carries. For instance, if there is \$20,000 total insurance actually in force on any piece of property and one company carries \$5,000 of this amount, that company must pay and must only pay one-quarter of any loss occurring to the property up to the amount for which it is liable; and this condition is valid even if one or more of the other companies carrying the same risk are unable to satisfy the claims against

them, for the amount of insurance legally in force determines the amount of various liabilities and claims. The collection of those claims is a subsequent operation.

The last quarter of line 98 up to line 99½ permits special agreements between assured and companies as to how policies shall apply. There are several of these agreements in common use, which will be described later in this lecture.

The last half of line 100 only applies where one insurance company assumes a portion of the liability of another company and permits such contracts between companies to be arranged according to the desires of the two companies. This standard form of policy is intended to secure fair and proper conditions between companies and property owners, and such contracts between companies as re-insurances, so-called, are hardly within its purview.

Lines 102 to 104 are intended, first, to prevent double compensation; that is, a profit to the insured, from a fire; second, to compel those through whose act or neglect the loss occurred to make good the loss they have caused. Public policy as well as equity demand this. It is manifest that I should not be made free of financial responsibility for my criminal or careless act simply because the person I have injured is insured. In such cases companies commonly pay the loss and then endeavor to collect from the person or corporation responsible for the occurrence of the loss, the amount so paid.

Lines 106 and 107 are a statute of limitation to guard against wilful and vexatious delays in making claims.

Lines 108 and 109 are merely explanatory.

Lines 110 to 112 are intended for mutual companies only, and in effect make the articles of association of such companies a part of the policy.

The remaining lines of the policy recite that no conditions of the policy may be altered except those whose language

provides for modification, and that no permissible alteration may be made except by written endorsement on the policy. It will be seen that the whole purpose of the contract is to define the rights of the two parties interested so clearly and fairly that disputes may be avoided and injustice or improper claims prevented. Despite the care exercised by its framers to this end, however, there is hardly a clause in the standard form which has not been referred to some court for authoritative interpretation, and a mass of legal decisions have accumulated which in reality are collateral to the contract and might even with propriety be deemed a part of it. With these decisions, curious and interesting as many of them are, we shall not concern ourselves here, the broad outlines of the contract being sufficient for our purpose.

4 — Despite the apparently stringent conditions and technical exceptions contained in this contract, and although these conditions and exceptions are sometimes made the basis of improper attempts to avoid payment of losses by unscrupulous companies, there can be no doubt that on the whole and in by far the greater number of cases, in fact almost universally, the assured secures absolute justice and more from the operation of this form of contract. A very liberal estimate of the amount of litigation under fire insurance policies indicates that not over one-half of 1 per cent. of claims result in law suits. When it is remembered that these claims are, in 90 per cent. of the cases occurring, for partial damage to property, concerning which there is legitimate opportunity for an honest difference of opinion and in view of the fact that the validity as well as the amount of all claims must be established before payment, the amount of ensuing litigations is seen to be absolutely inconsiderable. Not so in effect, however, for such is human nature that one resisted claim overbalances in public estimation a hundred which have been settled not only without friction, but even with liberality.

As we have seen, there are various portions of the policy which may be modified by special written agreements with the assured, called endorsements. Any of the numerous prohibitive clauses in lines 11 to 30 may be waived in this way. So also with the excepted articles noted in lines 30 to 44. The most important alterations in the contract, however, and those most generally in use are the ones which refer to interests of mortgagees and those which, as per lines 98 and 99, concern the extent of the application of the policy or its measure of contribution. The policy provides that, as to the creditors' interest, the contract shall apply as may be expressed in the written clause referring thereto. The ordinary way of recognizing a mortgagee's or creditor's interest is to issue the policy to the owner and then endorse upon it "loss, if any, under this policy payable to John Smith, mortgagee, as his interest may appear." When a loss occurs under a policy with this clause the amount of it is settled with the owner, but payment must be first made to the payee, i. e., the mortgagee, until his interest is satisfied, or unless he consents to allow payment to the owner, as he usually will do when the loss is small. Since, however, many lenders need and demand absolute security, it is a very common practice to attach printed mortgage clauses similar to the sample blank before you, marked Standard Mortgage Clause.

This clause practically waives all rights of the insurance company as far as the payee is concerned. He may collect his due, even if it can be proven that the owner, that is, the assured, has fired the property himself or if he has violated every condition of the policy. The only protection for the insurance company in those cases where the policy itself has been made void, but where nevertheless payment must be made to the creditor, is a provision that the claim of the creditor becomes the property of the insurance company and

may be enforced by it against the debtor if collectible. This right of subrogation, as it is called, is frequently taken advantage of by companies and in some instances enables them to recover a loss which they have paid under such conditions. The mortgage clause also imposes certain responsibilities upon the mortgagee in case violations of policy conditions occur with his knowledge.

The clauses referring to the extent of the application or contribution of policy are more difficult to briefly explain or to be readily comprehended. Before discussing those clauses at all, it may be helpful to make a few preliminary observations.

Where there is little or no protection against fire, that is, no local means of extinguishing fires, as in the case of village stores or shops, or where, for any other reason, the property to be insured is thought to be subject to great or total loss should a fire once start, the interest of the insurance companies leads them to limit the amount of insurance (as compared with the value of the property insured) which may be carried or recovered in event of loss. This is done in order that the interest of the owner in preserving the property may be so strong that the utmost watchfulness and careful attention will be observed by him. It is evident if, in the event of fire, he is likely to suffer a severe loss over and above his insurance, he will have a much stronger incentive to guard his property from fire than if it were insured for its full value. For a similar purpose companies find it necessary to limit the percentage of insurance to be carried in certain States or districts where conspicuous or abnormally heavy burning ratios indicate unusual carelessness, unsatisfactory protection, or dangerous methods of construction. In other words, the greater the danger of total loss the stronger pecuniary interest the owner should have in the preservation of his property.

On the other hand, where there is efficient fire protection, as in most large cities, or where a policy covers in several distinct locations, or on property which is not readily susceptible to damage, as for instance, bar-iron, there is a reasonable prospect that fires will be extinguished before a large portion of the property involved is destroyed. In such cases, therefore, insurance companies naturally desire that a large proportion of the value should be covered by insurance in order that a moderate loss of property shall cause only a moderate loss to the insurance company. In the unprotected village any loss is likely to be a total one. In the protected city almost all losses are partial, and insurance companies try to adapt their methods to the varying conditions.

Where it is desired to limit the amount of insurance, the New York law permits the use of the clause known as the "percentage value clause," a copy of which is before you. This, as may be seen at a glance, prevents the assured from recovering more than a certain, usually 75 per cent. of the value of the property insured. If by mistake he has been carrying insurance exceeding that amount, he is entitled to a return of the premium paid on the excess over the percentage which the clause fixes as a limit to recovery. By far the greater amount of insurable property is located under more or less efficient fire protection and consequently the limitation clauses are not used, but instead, where possible—for in some States the law stands in the way—what is commonly known as the co-insurance clause is used. This clause is also before you. It provides in the words of Mr. F. C. Moore, "that whatever percentage of the property is destroyed—one-quarter, one-half or three-quarters, as the case may be—that percentage of the insurance is payable;" or, as Mr. E. F. Beddall states the case, "it (the clause) leaves the insured free to carry as much or as little insurance as he deems needful, but it

fixes the proportion of the loss recoverable from the company in the event of fire, to such as the assured has chosen to pay for. If he insures for one-half of the value he recovers one-half of the loss, be it partial or total; if the whole of the value, the whole of the loss. There is, there can be, no inequity in this."

Still another statement of its effect may be made as follows: In order that the assured may secure indemnity for the whole of any large or small loss he may sustain, he must carry insurance equal to the full value of the property involved. Usually a percentage co-insurance clause is used, which makes some given per cent. of the value of the property, ordinarily 80 per cent., the amount which the insured must carry in order to secure in all cases full benefit of his insurance. Failing so to do, he can recover only such proportion of any loss amounting to less than 80 per cent. of the value of the property insured, as the amount of insurance he actually carries bears to 80 per cent. of the value. Thus, if the value is \$10,000 and the insurance \$5,000, he can recover but five-eighths of any loss which amounts to less than \$8,000; that is, of any loss which amounts to less than 80 per cent. of the \$10,000. When, however, the assured carries insurance equal to 80 per cent. of the value of the property covered, the 80 per cent. co-insurance clause is of no effect. The assured in such cases will receive the entire amount of his loss, be it large or small, not exceeding, of course, the amount of the policy. This should be carefully noted, for many people labor under the impression that where such a clause is used only 80 per cent. of any loss can be collected.

The co-insurance clause is even more important as a factor in the problem of making rates or prices, as we shall see when discussing that subject. Where this clause is used in a policy a reduction in price is made as compared with policies cover-

ing similar property similarly located, but without the co-insurance clause. In fact, this clause is often called the reduced rate clause in States where the law has not given it a name.

In some parts of the country, for instance Indian Territory, Texas and Arkansas, where fires have occurred with abnormal frequency, and particularly on certain classes in those sections, such as cotton gins, which are extremely liable to fire on account of the inflammable nature of the cotton and the process to which it is subjected, the percentage value clause is sometimes replaced by what is known as the "three-quarters loss clause," which provides that the property owner shall suffer one-quarter of any loss, great or small, which may occur to his property. This, of course, is used for the same reasons that prompt the use of the percentage value clause, but is much more radical. And, as a further precaution, there is embraced in policies covering mercantile and manufacturing property in States with a bad fire history, clauses making the policies void unless the assured shall keep an accurate set of books, take an annual inventory, and either keep both books and inventory in a fire-proof safe, or in a place where they will not be endangered by fire in a building where insurance covers. This clause is known as the "iron-safe clause," and is intended to bar out from the protection of insurance policies the shiftless and careless dealers and manufacturers who abound in many of the smaller towns, especially in the Southwest. It also insures a more satisfactory and intelligent loss settlement, should a loss occur, than is possible in those cases where the entire property is destroyed and no record of quantities or of transactions is preserved.

Still another clause used to govern the application of the policy is one known as the distribution average clause. This clause provides that the amount of insurance shall attach in each of two or more locations according to the value in each.

For instance, a merchant may have his merchandise in three locations—in his store where it is to be sold; in his warehouse, where he keeps a surplus stock, and in the freight depot of the railway or steamship line by which he receives it. As business progresses his merchandise is constantly shifted. One day two-thirds will be in his store; on another day one-half in his warehouse; on still other days he may have none at all in the freight depot. If he insures his stock under a policy with the distribution average clause, the policy will automatically divide itself as the stock is divided from day to day. If one-third of the value is in the warehouse so will one-third of the policy cover there. If the warehouse is empty the policy will apply only in the store and freight house. And also that part of the policy which covers at each location will be equal to the fraction of the total value of the property at each location.

Various other clauses are used by companies to further the convenience of different patrons, or to provide against the contingencies which arise in different parts of the country, but the foregoing are the principal clauses, the others being more seldom used.

Policies are said to be specific when they cover on one kind of property or in one definite location; floating when they cover under one division property located at a number of different locations; general when they cover several kinds of property under different items at one location; concurrent when they agree exactly as to their wording and as to the kind of property covered; perpetual when their duration is without limit, except by cancellation.

These perpetual policies originated in Philadelphia, where they are chiefly, if not solely, used.

It will be remembered that one of the earliest companies issued policies for seven years in consideration of a deposit by

the assured, and that the deposit was to be returned to the assured at the expiration of the policy. It was a very natural process to agree with the assured to retain this deposit indefinitely, thus extending the term of the insurance and making it perpetual.

As we have seen heretofore, eight other States have prescribed the New York standard policy, and again, seven States have adopted standard policy forms of their own, each differing from the other and all from the New York form. It follows that every company which does a widely extended business must keep in stock at least eight different kinds of policies. Moreover, since some of the States permit any form of endorsement clause which does not conflict with the policy in use in that State, while others, like New York, permit only clauses which have been specifically authorized by law or passed upon by the insurance official of the State, it will be seen that companies are compelled to have and use a very great number of different clauses. In fact, it requires a very considerable amount of study and a good memory for any one person to be able to keep in touch with the widely differing State requirements as to policy forms and their attendant clauses. Such unnecessarily and often injuriously divergent laws entail great expense and labor on the companies, and neither they nor the insuring public benefit therefrom. It cannot be doubted that one simple form of policy and one set of appropriate clauses would be better for all concerned.

ORGANIZATION AND METHODS

DIFFERENT KINDS OF MUTUALS—TAXATION OF COMPANIES

BY RICHARD M. BISSELL

In a general way it may be said that fire insurance is transacted through three different agencies, the first and most important of which is the stock companies; the second, the various forms of mutual companies, and the comparatively unimportant third, the association of individual insurers known as individual underwriters and Lloyds. Mutual companies again may be divided into three classes—first, the local county or town mutuals; second, the state or general mutuals, and third, the manufacturers mutuals commonly known as the factory mutuals and their imitators.

The local or county mutuals are by far the most numerous of any class of companies in the United States. Their number is approximately 1,500. There are 125 in New York State alone.

The laws which govern their organization and operation are very dissimilar in the different States. In some States, notably in New York, they are prohibited from operating in large cities. This is, in New York at least, a result of the great fire of 1845, when all existing mutual companies doing business in New York City were bankrupted. Usually their operations are limited by law to a few non-hazardous classes—such as farm property, dwellings, churches and stores—in a given limited district. Often their operations are confined to a town or county, though in New York State a local mutual company may operate throughout five counties.

As a rule they must have, before organization is perfected, applications, i. e., promises for a certain amount of insurance, usually somewhere between \$50,000 and \$200,000, already on file, and a portion of the premiums therefor—commonly 25 per cent.—paid in advance in cash.

Having secured the necessary applications, those who are organizing the company—usually a group of farmers, who think the charges of the stock companies are exorbitant—secure from the State authorities the proper papers of incorporation; then a meeting of the applicants or members is called and officers are elected. Business is then begun by issuing their policies to the original applicants. In most cases all the work of the company is done by the secretary, who very likely is the village postmaster, store-keeper or bank cashier, and who receives a fee for each policy issued, or who may be compensated by a salary. Those interested in the company urge their friends and neighbors to join them, appreciating the necessity for a considerable number of policy-holders amongst whom the losses may be divided. The applications thus secured are usually passed upon as to valuations, desirability, etc., by the executive committee or board of directors. If an application is approved a policy is issued by the secretary, and perhaps signed by one or two of the committee. These policies are issued in consideration of a small cash payment, equal to about one-fourth the price commonly charged by stock companies, and a note given by the applicant for an amount equal to three or four times the cash payment. These notes are subject to call if the needs of the company so require. Each policy-holder is liable for the losses of the company, according to the articles of agreement or incorporation or the by-laws of the particular company in which he is insured, or perhaps according to an agreement assented to when the policy is issued. Sometimes the limit of

liability is stated in the policy. In some cases each policy-holder is liable for his fractional share of any or all liabilities which may come to the company. More often, however, this liability is limited to a certain percentage of the amount of insurance the individual carries or to some multiple of the amount for which he has given premium notes. The policies are usually issued for five years.

Since the executive committee and all the applicants are neighbors and acquaintances, the personal and financial qualifications of every applicant, as well as the value and condition of his property, are well known, and thus the danger from dishonest losses or over-valuation is reduced to a minimum. No man with a bad reputation can secure insurance in one of these institutions, if it is properly conducted. Moreover, every policy-holder is constantly, as it were, under the surveillance of his neighbors, who are members—many of them—of the same company; consequently the opportunities for the successful perpetration of fraud are not good. Furthermore, while in many rural communities it is considered a very clever business stroke to get the better of one of the large stock companies, who, like the railroads, are looked upon as natural enemies, it is an entirely different matter when a man's desire to realize on his policy results in an assessment upon his neighbor. An attempt to do so, whether successful or not, usually results in ostracism for the offender.

These companies, when wisely and honestly managed, succeed or fail according to the burning record of the districts where they operate. A few heavy losses in the earlier years of their existence usually finish them. Farmers and villagers quickly tire of assessments. On the other hand, in those districts which have had favorable records as to fires—and there are many such—these little companies live and prosper for years. Often they accumulate assets of considerable value and

in such cases furnish indemnity to their members at very low cost. Having no expense of any kind save the fees of the secretary and the cost of their few supplies, they can be very economically operated. Whether their record as a whole has been one of profit or loss to their members cannot be said with any degree of certainty. Large numbers are organized and equally large numbers fail every year, and while many are short-lived, some exist to-day which are fifty years or more old. Their strength and their weakness alike are largely due to the fact that they transact business in a very limited field, where every risk is known and watched, but where a few losses make insurance very costly owing to the limited number of those among whom the losses are distributed. They are usually free from the heavy burden of taxation which rests upon stock companies, being thus favored by that policy of discrimination on the part of the legislator which so often is in evidence where the farmer or laboring man is concerned.

Concerning the formation of the mutual companies which do a general business throughout one or more States and which are usually called State Mutuals to distinguish them from County and Town Mutuals, the laws of the different States vary to an extreme degree. In New York and some other States there are no laws whatever governing or controlling such companies. In others, as for instance Wisconsin, the laws are specific and minute. On the whole, the most marked difference between these laws and those which govern the town mutuals concern the amount of applications for insurance which must be secured before a charter can be had. In Wisconsin this amount is \$750,000 as compared with \$50,000 for a local mutual company. In some States the classes of business which these States Mutuals may write are limited by law; in others the maximum amount of liability which may be assumed on any one risk is so fixed. The Wisconsin law is

remarkable for providing specifically for five kinds of mutual companies which may transact business over an extended territory. Among them are companies formed by retail lumber dealers, hardware dealers, church societies, and finally a class unique in insurance history so far as I know, viz., mutual companies formed by the treasurers of county insane asylums and poorhouses.

These general or state mutuals have not on the whole been successful, for, having ordinarily no great strength of assets, they cannot command business in districts remote from their place of domicile, except by quoting dangerously low prices. Moreover, they are compelled to delegate to agents or others the power to select risks and do not always get the best service. Those who operate the company lack the incentive of profit, a most important factor.

Such companies commonly do not possess and cannot acquire the highly trained staff, the complete organization and concentration of authority necessary for the successful prosecution of a general business under competitive conditions throughout a wide territory, and when such powers are given to some official of a mutual company, too often the trust is abused. As long as the business grows rapidly and heavy assessments are avoided—for the loss ratio on a rapidly growing business is always small—the members are not likely to interest themselves in the methods pursued, and when, after a time, the assessments become heavy it is usually too late to apply a remedy. The fact that there were seventy-four such mutual companies in New York State alone in 1853, and but two or three to-day, is sufficient commentary on their experience, to which it is perhaps permissible to add the following from the first annual report of the Insurance Department of the State of Pennsylvania, issued in 1863:

“Not a few mutual companies have been shipwrecked because of the ambition of officers to accumulate a large business ;

going far from home; trusting to agents, and measuring prosperity by the amount at risk and gross cash receipts.

"Near home, within the limits of half a dozen counties, the officers and members are more or less intimately acquainted with the character of those composing the partnership and the property at risk; but far from home, in this or other States, they are necessarily, to a great degree, ignorant. There the agent acts for them. His interest is to do as much business as possible and he is not always so critical as to the risks he assumes as he ought to be. In time, loss after loss is followed by assessment upon assessment, until the home members of the company find that the insurance which ought to have been cheap has turned out very dear. The cause of the disaster is very plain. The laws essential to cheap insurance have been set at defiance. Hazardous and special risks have been written at rates far less than the stock companies could afford, as if the mutual system contained within itself an exemption from the inevitable laws of hazard. The officers of the company attribute their misfortunes to an unprecedented run of ill luck. Mere chance played the smallest part in producing the catastrophe; want of knowledge and judgment the largest. Then comes the trouble. The policy-holders rebel against the payment of the large assessments. The company resorts to litigation to compel payment. They are pressed to pay losses and are compelled, in turn, to press the payment of assessments. The practical usefulness of the company is at an end and its career is terminated amid the execrations of all parties interested."

It is true that there are throughout the country a number of fortunately prosperous old institutions of this kind which have been conservatively managed, have transacted a selected business only of the non-hazardous classes and have confined their operations almost invariably to limited territory. These

institutions have had honorable careers, and have furnished cheap indemnity.

In life insurance the policy-holder looks to the company for a certain definite payment at some time in the future, and, so far as experience shows, runs little if any risk of personal liability by becoming a member of a mutual company. In fire insurance, however, the policy-holder contracts for indemnity against an extraordinary and even unlikely loss, and yet by joining a mutual company he exposes himself to the possibility of a serious personal liability, in the event of a conflagration, or if the bad selection of risks results in heavy losses. Instances have occurred where former policy-holders have been assessed as late as five years after their own policies had expired, and long after they supposed their connection with the mutual company of which they had been members had ceased.

We now come to the consideration of the most interesting, and, so far as their influence on the methods of fire insurance companies and on the fire loss of the country is concerned, by far the most important class of mutual companies, viz., those known as the factory mutuals.

Edward Atkinson, LL.D., one of their most eminent officials and advocates, is authority for the statement that this class of companies was devised for the *prevention* of loss by fire, the payment of indemnity for losses sustained being a secondary matter.

Theoretically speaking, insurance companies pure and simple have nothing to do with the prevention or extinguishment of fires, or with the reduction of the fire waste. Their province is merely to distribute the losses which fires cause. Despite this truth, it was a short-sighted business policy which prevented the stock companies from actively coöperating with factory owners, especially with cotton and woolen manufac-

turers, who, when the burning ratio, and hence the cost of indemnity, had risen to an unbearable extent, sought so to improve their property as to reduce the number and amount of losses and so indirectly the cost of insurance. It seems to be true, however, that the failure or absence of such coöperation was largely responsible for the origin of this class of factory mutual companies, whose methods as first practiced by themselves, later by the stock companies, have fairly revolutionized methods of protection against fire and made possible greatly reduced rates for risks of all classes when properly protected.

The first of these companies was organized in 1835 by Zachariah Allen in Providence, Rhode Island, and was called the Providence Manufacturers' Mutual Company. In 1850 there were three of these companies, and the number had increased to seven in 1860. There are now in Rhode Island and Massachusetts eighteen such companies in active operation, and others in Pennsylvania and other parts of the country. These companies are carrying insurance amounting to over one billion of dollars on factory property.

The activity of these companies was greatly increased and the expansion of their operations greatly aided, by the material advances in rates which were made by the surviving stock companies after the Chicago and Boston conflagrations. These advances, amounting to 56 per cent. or more, compelled factory owners to look about for less costly sources of indemnity, with the result that many of them adopted factory mutual methods of protection and secured the low cost insurance resulting therefrom.

From the outset these companies have endeavored, first, to ascertain and eliminate the causes of fires, and, second, to provide such ample protection that any fire which might occur should be extinguished with but slight loss.

In these particulars the record of the Associated New England Factory Mutual Companies has been quite wonderful. Their method is to charge a cash premium based upon the class of work done, construction of the building in question, the extent to which dangerous processes are eliminated, and the extent and efficiency of the apparatus for extinguishing fires. No factory can secure the protection of this system unless in respect to all these matters it comes up to a prescribed standard of excellence. In addition to this cash payment, a liability for assessments equal to five times the cash premium is assumed by the policy-holder. As a matter of fact, however, since 1850 no assessment has been found necessary by any of the New England companies. On the other hand, the cash premiums have not only paid losses and expenses, but have enabled a division of profits to be made at the close of each year. In this way the actual cost of indemnity is reduced to a small amount.

Mr. Atkinson ascribes the success of these companies to recognition of the following principle: "The only persons who can prevent loss by fire are the owners or occupants of the insured premises. Upon them rests the responsibility for heavy loss, if any occurs, in nearly every fire. All that the insurance company can do is to pay indemnity for loss which, if large, in nine cases out of ten, is due to the lack of apparatus for preventing loss or to the lack of care and order in the conduct of the work."

In their efforts to ascertain and eliminate the causes of fire, these companies have investigated and endeavored to safeguard all processes used in manufacture. They have investigated methods of illuminating, heating, lubricating; have devised elaborate plans for the safe construction and arrangement of factories in order that the spread of fire might be retarded and that especially dangerous processes might be

isolated, and, finally, have tested and applied the most modern and approved apparatus for extinguishing fires. Moreover, when a factory comes into their membership they not only see to it that in all respects its condition is brought up to their requirements, but by frequent inspection they secure the constant maintenance of such conditions. They are, indeed, hardly to be called insurance companies at all, but rather associations of manufacturers with experienced inspectors and engineers, whose work it is to eliminate the possibility of loss or serious damage by fire. The insurance feature only comes into play when, despite their precautions, a damage is incurred. It will be realized that, though the number of fires and the loss resulting therefrom have been very greatly reduced by these methods, a large expenditure is necessary to construct, arrange and equip, a factory in such a way as to bring it up to the standard of their requirements.

While to these factory mutuals must be given the chief credit for inaugurating such plans for safeguarding property, the stock companies have for a number of years been pursuing methods of coöperation with the owners of factories, and other classes of property as well, similar to those briefly hinted at above, and now are as well equipped as the factory mutual companies to make suggestions to property owners for the proper construction, arrangement, care and protection of their property.

The properties thus equipped in accordance with the views of experts are called "protected" or "equipped" risks, and there exists the keenest rivalry between the factory mutual companies and the stock companies to secure the control of this class of business. Thus far the efforts of the mutual companies have been the more successful, especially in New England, though the stock companies are gradually reducing their rates to a point where they approximate the low cost at which the factory mutuals have been able to furnish indemnity.

There is no reason why this class of mutual companies should not combine to prosper if they continue to confine their field to isolated and thoroughly protected factories, the hazards of which have been properly provided for.

Mr. Atkinson, in regard to this matter, says, "the method of granting contracts by the factory mutual companies must of necessity be limited to special establishments, each carefully guarded from the other and fitted with its own apparatus for the extinction of fire." "The mutual contract cannot safely be adopted in the crowded districts of large cities for the reason that the owner or occupant of one building may have a very dangerous neighbor in the next, over which he has no control."

There are two factors unfavorable to this class of companies; first, the possibility that too extensive liability as compared with the income, may be assumed on individual risks, owing to implicit reliance on the experience already gained, in which case dangerously large losses may be incurred; and, second, the growing competition of the stock companies for the protected risks, which is constantly becoming keener. The stock companies have two important advantages to offer their patrons: first, that their policies are issued at net cost instead of in consideration of a cash payment to be later reduced by dividends; second, that no liability whatever is assumed by the policy-holder.

Insurance organizations of another class have flourished in great numbers during the past ten or fifteen years. These are known for the most part as Lloyds of one kind or another. They are voluntary partnerships for the purpose of insuring property. As a rule each partner is liable for a certain portion of every loss which occurs. The name Lloyds is, of course, taken from the famous English institution, and is too

often used in order to convey the impression that these new American concerns are comparable in point of resources and reliability with that office. As a matter of fact very few indeed of the so-called Lloyds in this country are in a position to offer reliable contracts of indemnity. They furnish the combined promises of a number of private individuals, and the value of the contract in most cases is entirely dependent upon the financial strength of these individuals, though in a few instances a guarantee fund is paid in, which is liable for claims. Some of these concerns are responsible and have honestly and promptly paid their losses. Most of them, however, are without any of the qualities which a company transacting an insurance business should possess, and not a few are operated solely in order to get possession of premiums, which are not by any means designed to be accumulated for the benefit of their foolish patrons. One very frequent feature of their contracts, which makes them without particular value in the congested sections of large cities, is the provision that in case of a general conflagration the liability of each partner under all outstanding contracts shall be limited to a certain fixed amount. These policies are usually issued through some one agent acting for all the partners, who, as a rule, know nothing about the transactions in which their names and credit are involved.

While these Lloyds are most of them new institutions—recent phenomena in the insurance world—their operations have been so general and the results so unsatisfactory to the public, that in ten States laws have been passed which require a cash deposit or capital to be paid in by every such partnership as security for the fulfillment of their contracts. One State—Pennsylvania—prohibits them altogether. In seventeen States there are as yet no laws applicable to them. In the rest of the United States they are, by the wording of the insurance

laws, subject to the same restrictions and requirements as ordinary insurance companies. There are from sixty to seventy of these Lloyds now in existence operating in a more or less general way in the United States, of which number perhaps less than half a dozen are responsible and worthy of a limited recognition. There is no way of ascertaining the volume of business which these institutions transact.

We now come to the consideration of the methods of incorporated stock companies, which, as before stated, form altogether the most important class of insurance companies, both as to the business transacted and as to solidity of assets and reserve, and which, as stated in a former lecture, transact 90 per cent. of all the business done in the United States.

In the case of American companies, at least, it is usual for the directors to concern themselves chiefly with the financial or banking department of the company's business, largely because insuring property against fire is a business requiring technical training and one which must be conducted by men well versed in its numerous details. Therefore the business of insuring property is commonly left to the officers of the company and their assistants.

The whole country is usually divided into districts or departments and an officer, or more than one, placed at the head of each. These departments in some cases are all under the immediate supervision of the chief executive and located in the head office of the company. It is believed by some company officers that a more consistent policy, a more uniform method of procedure and greater economy of operation can be secured in this way. The majority of companies, however, establish departments in various large cities, each department having jurisdiction over the States naturally tributary to the city where it is located. These departments are usually called general agencies. The companies which maintain them do so

because of the belief that in this way they can get in closer touch with their various agents and with the insuring public and therefore can secure the best obtainable results, both as to the amount of business obtained and in the matter of closely supervising it. The cities usually selected for department offices are New York, Chicago and San Francisco, and, to a smaller extent, Boston, Philadelphia, Atlanta, New Orleans and one or two others.

The head office of the company contains the department for the States adjacent thereto. These departments are intended to thoroughly work the territory under their jurisdiction according to the general scheme of operations adopted by the company. Some companies endeavor to secure business from the larger cities only, but, both for the sake of a larger income and because of the safety and steadiness which can only be secured from a widely distributed business, most companies endeavor to get business from all possible sources where a profit is likely.

The business is secured by means of agents residing in the various towns and villages where the company operates. These are called local agents. In large cities, such as Cleveland, Rochester, Louisville, etc., these local agents usually devote their entire time to securing and handling the business and often the same man or firm in such a city will act as agent for anywhere from one to a dozen insurance companies. In the smaller places, however, the amount of business to be done is so small and the number of companies desiring it so large that the business usually demands only a portion of the agent's time, and is, therefore, combined with banking, the practice of law, store-keeping, or some other occupation. Moreover, the agent in such little places acts for as many companies as he will consent to represent.

It will be seen that local agents are the means by which a company comes into direct contact with the insuring public.

The local agents are the ones who secure for the company the business on which it feeds. They are, therefore, a factor of supreme importance in the business, and companies endeavor through their special agents and in other ways to maintain cordial and friendly relations with them. In order to insure success, popularity with local agents is quite as important as popularity with the public in general. In order that there may be an intimate knowledge of the business at each agency, that new agencies may be secured and unsatisfactory ones discontinued, and to the end that all matters concerning the transactions between local agents and the department office may be properly supervised, men called special agents are employed, whose duty it is to travel constantly over the field to which they are assigned, locating agencies at all available points, carefully inspecting and securing accurate information concerning all the risks which the company insures, collecting over-due payments, endeavoring to secure from local agents as much desirable business as possible, and in general to further the interests of the company in every legitimate way. To them also is assigned for the most part the duty of arranging with claimants for the settlement and payment of the losses which occur in their particular territory, though some companies doing a very large business have so many losses to settle that expert adjusters, as they are called, are employed for this purpose only. The local agents are equipped by the company with the various forms, books of record, and other supplies necessary for the transaction of business; also with blank, unsigned policies.

When a contract is secured, by an agent, from some property owner a policy is at once filled out, executed and delivered to him and as soon as possible thereafter an abstract of this contract, containing a full description of the property and all the details of the contract, is made out by the agent on a

blank provided for that purpose, called a "Daily Report." A sample blank of this kind is now before you. This report is thereupon at once mailed to the department office, which has jurisdiction over the territory in which the agent is located, and at the end of each month an account or statement of all the contracts made during the month is sent by the agent to the same department office, accompanied or to be followed by a remittance for the premiums collected.

The local agent is compensated by a commission, usually 15 per cent. on the amount of premiums secured or renewed by him. He is presumed and required to protect the interests of the company or companies he represents by carefully selecting desirable business and by following out their instructions in all matters. Companies endeavor to provide their agents with complete instructions as to their desires and methods concerning the conduct of business, so that agents may properly care for their interests.

When the daily reports of policies issued reach the office of the company they are carefully examined and reviewed by trained men called examiners. If the wording of the contract (the form, so-called) is found to be faulty, if the price is deemed to be too low, or if any other error is discovered, the agent is promptly requested to amend the contract in the necessary particular. If the property insured is deemed to be an undesirable subject for insurance, he is requested to cancel or terminate the contract at once.

The duties of the examiner are extremely important. They demand an intimate acquaintance with the hazards usually incident to various kinds of property; also familiarity with the conditions affecting the district or town where each risk is located. Moreover, in judging a risk, the character of the ownership, the nature of the inherent and adjacent or exposing hazards due to the various occupants in the vicinity, the

amount and quality of the protection against fire, the record of the locality as to fires, the rate, i. e., price obtained, and numerous other factors must be considered and investigated with considerable thoroughness by him. To facilitate this work the general offices are equipped with maps showing the construction and size of every building in the business districts of all towns of importance; also with commercial reports indicating the financial standing and business records of all merchants and manufacturers, inspection reports of important risks made by special agents and trained experts as well, and various other tables, books of reference and of rules, which aid the examiner in passing judgment upon the numerous reports which come before him. A successful examiner, however, must have a clear head, quick preceptions, cool, careful judgment, and a very considerable knowledge acquired by experience. The examiner has usually two or more assistants who help him in matters of detail.

The monthly accounts or statements before referred to are also carefully gone over by auditors or bookkeepers. When the work of examining and auditing is done, the daily reports and the accounts pass on into the hands of a large force of clerks, who from them make up the elaborate records and statistics which the insurance companies are required to keep, partly for their own guidance and partly to comply with the laws of the different States.

In addition to the daily reports and accounts, canceled policies are also forwarded in large numbers by agents to the general offices; also notice of changes in contracts, called endorsements. Those must all pass through the same intricate and complicated process as the original daily report.

In another part of the office the losses are handled. Every loss is at once reported to the general office in whose territory it occurred. It is then assigned to the proper man for

settlement—usually a special agent. As soon as possible he visits the scene of loss and arranges a settlement with the property owner. The completed reports of these settlements are forwarded to the general office and are very carefully tabulated, classified and compared with the record of premiums received, the premiums and losses of each class being grouped by themselves in order that the experience of the company, that is, the profit or loss arising from transactions with each class of risks, may be ascertained. A large department office in the course of one year will receive, perhaps, 125,000 daily reports from its agents, who will be located in, say, 2,500 cities, towns and villages. These daily reports will carry premiums averaging about \$20 each, or amounting to \$2,500,000 in all. Such a department will also have to adjust and pay from 3,000 to 4,000 losses each year. To keep the elaborate records and tables of statistics concerning all these transactions, to watch them throughout the life of the contracts, to collect the moneys due and to carefully and justly pay the losses—all these tasks involve an amount of detailed, arduous and technical labor which is formidable to contemplate. They also render necessary the services of well-trained men—high priced, many of them—and a very large expenditure for proper equipment and maintenance. At the head of such a department is a manager, or general agent, as he may happen to be called. He is responsible for the results obtained in the territory under his jurisdiction. He must see to it that the numerous and troublesome details of the general office work are kept up, exercise general supervision over the examiners and their work, direct the movements of the traveling special agents and inspectors, decide all important questions arising in loss settlements, and last, but not least, utilize all these various factors in such a way that the company may secure its fair proportion of desirable business. A large department as indicated above will have

on its rolls from 2,000 to 3,000 agents and perhaps one hundred or more salaried employees.

At the head office of the company the president and other officers exercise a general oversight over all the departments. Usually monthly tabulated reports of all transactions are made by the departments to the head office. Any profits are also remitted to the head office for investment. On the other hand, if losses exceed the receipts of any department, advances are made to that department.

The officers are also charged with the duty of deciding upon the general policy and methods of the company for the guidance of the various departments. The amounts for which liability may be assumed on different kinds of risks are also determined by them. In other words, the plan of campaign is laid out and managed by the officers and executed by the department managers through their special and local agents. In the case of those companies which do not make use of separate departments located in different parts of the country, a large staff of officers is customary at the head office, where the junior officers perform the duties usually devolving upon department managers.

In the large cities where values are great and congested and where consequently the amount of business to be done is very large, another class composed of the middlemen or brokers, as they are called, has arisen. These men secure from property owners orders for insurance which they then place with the local agent and in return receive a portion, usually one-half or more, of the agent's commission. These brokers usually take entire charge of the insurance affairs of their patrons, acting as their agents in all matters relative thereto. In New York City so universal is this method of transacting business that there are practically no local agents who solicit or secure business direct from property owners, and most com-

panies maintain their own offices with salaried managers, with whom the brokers deal. The multifarious labors briefly indicated in the foregoing pages are continued without cessation throughout the year and, at its close, the multitudinous details are aggregated and the results of the year's transactions made up in the different department offices and forwarded to the head office of the company. There all these figures are combined into an exhibit called the annual statement, which also includes a detailed list of the assets and liabilities of the company and other particulars affecting its business and its financial condition.

Broadly speaking, these annual statements show two general items of income and two of outgo. The income obviously arises from premiums and the interest on investments. The two avenues of outgo are for losses and for expenses.

The loss ratio, that is, the percentage of the annual premiums which is required to pay losses, is, of course, beyond the control of companies, except in so far as it depends upon care in selecting and rejecting business and the wise distribution of liabilities. In well-managed companies this percentage ranges from 45 per cent. to 65 per cent. according to the experience of the year. It will almost never happen that a loss ratio of but 45 per cent. is obtained. Such a ratio indicates an abnormal profit. Companies frequently, however, experience a loss ratio of 65 per cent. or even more, but that figure is close to the danger line and when reached usually means a net loss on the year's business.

The expense ratio for most companies will average about 35 per cent. This is partly controllable, though the constantly increasing interference of State governments and the steadily growing burden of taxation makes the task of limiting expenses a formidable one. The expense ratio of 35 per cent. may be divided, roughly, into the following items, according to the careful tabulations of Mr. F. C. Moore:

Commissions to agents	15 per cent.
For the salaries and expenses of traveling special agents, adjusters, and expert inspectors....	4½ per cent.
For taxes	2½ per cent.
For maintenance of the department and head offices, including the salaries of all officers, examiners, clerks, etc.; also for rent, ad- vertising, printing, supplies, etc.	13 per cent.

Statements of a somewhat similar description are made up by all properly managed business enterprises and corporations for the information of their officers and stockholders and in order that the gain or loss resulting from the year's operations may be known.

Fire insurance companies have an additional reason for making up these statements, i. e., the legal requirement that they shall do so. As early as 1807 insurance companies were required by the State of Massachusetts to render an account of their affairs to the General Court, but probably the accounts so rendered were more or less informal. In 1837, however, they were compelled to make annual returns to the Secretary of the Commonwealth, by whom a true abstract of the returns was made to the legislature. In 1855 a regular insurance department was established.

In New York, insurance companies and other moneyed corporations were in 1828 required to render annual statements to the State Comptroller. This law, however, applied only to New York State corporations which should thereafter be created.

In 1849 the first general insurance law was passed in New York, and by it all State companies (except those with special charters) and also those of other States were required to render annual reports of their condition and of the year's

transactions; but not until 1864 were all companies, whether of New York State, other States, or foreign countries, compelled to render regular annual statements.

Taxation began, however, as early as 1837, when a levy of 2 per cent. was imposed on the premiums of fire and marine insurance companies of other States. It was, no doubt, because the business of insurance was novel and little understood, and furthermore one which was, in the early days of its history, a favorite field for swindlers, that it thus early came under the special supervision of State authorities. An additional reason is to be found in the fact that life insurance companies are trustees for large amounts, representing the savings of their policy-holders.

Finally, the availability of the companies as sources of revenue was an early discovery of the legislatures, and, therefore, the annual statements have always found their chief use as bases for tax levies, though by means of numerous and constantly more numerous inquiries and queries they are also made to serve as tests of solvency and hence as a means of protection to the insuring public. Companies who fail to meet certain established tests of strength are refused authority to transact business.

Whatever the reasons may have been that first led the authorities and legislatures of States to thus assume a special supervision over the insurance business far beyond that to which any other business is subjected, the custom is evidently a permanent one, for, at the present time, all States of the Union have more or less stringent laws governing the organization of local companies and the admission of non-State companies for the transaction of business within their borders, and all without exception require the filing of annual statements.

The tax on the income of insurance companies is an absurdity, for it is the tax on a tax. The insurance company

must pay its losses and expenses from its premium income. It is therefore perfectly evident that a tax on this income must infallibly result in an increase of rates. In no other way can the demand be met. According to the present system, the income of companies is taxed even when exceeded by the outgo for losses and expenses. The years 1889, 1891, 1892, 1893 and 1898 were all unprofitable years. The aggregate losses of companies reporting to the New York department were, during those years, over \$33,000,000. Yet in those same years, according to Mr. Moore, the companies paid taxes amounting to \$14,500,000. The net profit for all companies for the entire period from 1891 to 1902, disregarding the increase of outstanding liabilities, was \$59,571,933. The taxes paid during the same period amounted to \$40,628,927. The premiums, roughly speaking, were \$1,500,000,000; therefore, the taxes collected during these years were equal to $2\frac{7}{100}$ per cent. of the entire amount of premiums collected, and $68\frac{3}{10}$ per cent. of the entire profit resulting from their insurance transactions. It is doubtful if any other business in the world's history was ever so severely taxed, or any other institution in so many ways hampered, harassed and annoyed by the operation of State laws and State officials as are the insurance companies. In speaking of this matter Mr. Charlton T. Lewis said: "Government supervision, wasteful taxation and the ignorant prejudices which support these practices are the worst evils of the insurance world." The only hope is that a more widespread knowledge and appreciation of the real nature of insurance and of its true principles may serve to allay these prejudices and secure some modification of the present system and methods of State supervision and control.

The largest organization of companies known to the insurance world is called "The National Board of Underwriters," with headquarters in New York City. This association is com-

posed of companies and comprises practically all companies doing a general business throughout the United States. It is advisory only, in capacity, and concerns itself with proper forms of contracts, the investigation of new hazards (such, for instance, as that arising from the use of acetylene gas) and with other problems of general interest. It endeavors to check the practice of incendiarism and arson, tries to secure the passage of proper laws and to defeat the great number of improper ones which are annually attempted to be passed. In a very general way it strives to raise the standard of the business and to promote intelligent and scientific underwriting. Each year elaborate tables showing the results of the operations of all companies are made up by this board. These tables are extremely valuable. Having nothing to do with prices and exercising no authority over its members, it is an organization which does not come in conflict with the law of any State.

In the several parts of the country—East, South and West, and on the Pacific Coast—are organizations of company officers or district managers embracing usually from 50 to 75 per cent. of the companies operating in the respective fields, which not only apply the suggestions of the National Board in a more or less authoritative and mandatory way to the business methods of their particular districts, but also devise, where the law permits, schedules and methods for making rates and prices for the various classes of property. These organizations also prepare forms of contracts, rules and requirements in accordance with which the different classes of business, especially those peculiar to the district,—such as cotton in the South, grain in the West, etc.,—may be wisely handled.

In the various States of two of these larger districts, except where prohibited by law, there are minor organizations com-

posed of the traveling men or special agents of many or most of the companies. These associations are, to a more or less extent, under the control of the larger organizations and carry on the same kind of work, but in a more direct and minute way applying the rating schedules to individual towns and properties. There are still smaller associations composed of the local agents of the several cities, towns and villages. These local organizations are usually called local boards, and supervise the conduct of business in their respective localities.

Of late another and entirely different kind of organization has appeared (in the insurance world), namely, "The National Association of Local Agents," with branches in every State. This body has for its purpose the advancement of the interests of local agents everywhere, their protection from injury arising from the actions of insurance companies, city or state legislatures, and from any kind of competition which they consider unfair or likely to destroy the agency system. It will be readily seen that all these organizations constitute an extremely complex system.

The connection between the various portions of it is not to be called close, and their methods and general policies are frequently inharmonious and irreconcilable. Local jealousies, the great number of companies engaged in fierce competition, the spirit of home-rule (nowhere so evident as in the insurance world), and all of these conditions intensified by the facility with which local stock and mutual companies may be organized and operated, prevent anything like a complete or dominant combination among companies or their representatives. In fact, it is probably true that no other business of such widespread character is carried on under such continuously aggressive competition.

It is true that in certain sections and in certain cities and towns uniform conditions as to rates and methods obtain, and

in times of widespread disaster, or after great conflagrations, the companies do for a time successfully repress their competitive warfare; but at the first dawn of prosperity the strife begins afresh and continues until disaster again destroys the foolish and brings temporary wisdom to the survivors. Until these conditions which surround the business are radically changed there need be no fear of an insurance trust.

RATES AND HAZARDS

BY RICHARD M. BISSELL

In the language of fire insurance, the name "risk" is applied to any piece or kind of property which an insurance policy may cover. The hazards of a certain risk (as for instance a building), or of a certain class of risks (such as flour mills), are the peculiar or particular circumstances or characteristics pertaining to or affecting it which favor or make for its destruction by fire. The extent to which these hazards endanger a given risk theoretically governs its rate, i. e., the price, per cent., which must be paid for insurance. A brief examination of the subject of hazards, therefore, will naturally precede and lead up to the subject of rates.

Hazards may be divided broadly into two classes,—physical and moral, or personal, as they are sometimes called. The physical hazards are inherent in the risk itself and in its surroundings. Moral hazards arise from personal factors. Physical hazards may be partially measured, appraised, estimated, and to a certain extent controlled. Moral hazards are hidden, presumed rather than known, not to be measured or scheduled.

The causes of fires are of far greater variety than is commonly known. They are indeed almost infinite in number, for practically every substance and almost every process of labor, manufacture or commerce is under certain circumstances or in certain relations to other articles or processes productive of danger from fire.

Physical hazards may be divided into two classes, as external and internal, which are sufficiently distinguished by their

names. The external hazards include lightning, conflagrations, sparks, bonfires, forest and prairie fires (which are sometimes very serious hazards), and exposure, the greatest of which by far is exposure,—i. e., the danger to which a risk is subject from the burning of other risks or substances. To this cause is due 28 per cent. of all losses, both as to number and value. Property valued at \$50,000,000 was destroyed by exposure fires in 1902. We speak of exposure as a hazard and attribute 28 per cent. of all losses to exposure, meaning thereby that as to 28 per cent. of all risks that are destroyed or damaged, the losses are caused by fires, the origin of which is exterior to the risks embraced in the 28 per cent. It is an obvious truth, however, that the original cause of an exposure loss is usually to be found in some physical hazard and, ordinarily, an internal physical hazard pertaining to an adjacent risk. The following general rule may be laid down: The degree of exposure hazard to which any risk is subject is determined, first, by its own combustibility and ignitibility, i. e., the readiness with which it will ignite and the rapidity and completeness with which it may be destroyed by fire; second, by the distance which separates it from the buildings or substances from which the exposure hazards arise; third, by the inherent hazards of the risks adjacent to it or within burning distance, and fourth, by the extent of protection which it receives from water works, fire department, or private apparatus. Under especially dangerous conditions there is hardly any limit to the burning distance. In the summer of 1894, during a drought accompanied by high winds, there were extensive forest fires in northern Wisconsin and Michigan and risks were burned by exposure arising from fires twenty miles or more distant. Sparks and embers fell on the decks of vessels many miles from land on Lake Superior. The exposure hazard constitutes a factor in the total of a

risk's hazards, which is highly susceptible to reduction by efficient fire protection. In case of frame mercantile buildings, it frequently constitutes the most important factor in determining the rate.

The most important of the external hazards are, in their order,—after exposure, sparks, which cause about 4 per cent. of the entire number of fires (locomotive sparks alone caused over six hundred out of fifteen hundred cotton fires during 1902, of which the average loss amounted to over \$5,000), and lightning, which is responsible for nearly 3 per cent. of all losses, or three and a half millions in 1902.

The internal hazards are much more numerous and, leaving out exposure, much more productive of fires. They may be sub-divided into five classes, which, however, are not absolutely distinct. The first class, according to our arbitrary division, is spontaneous combustion. This, while ordinarily not an imminent hazard, becomes one whenever vegetable or animal fibre is handled or stored, as in cotton and woolen mills, cotton warehouses, ice houses, etc. It is a characteristic of these substances when more or less saturated with any oily substance (more especially if it be an animal oil or grease), that rapid oxidation or spontaneous combustion ensues. Two hundred and three out of 1,683 fires in cotton mills, and 151 out of 1,630 fires in woolen mills were due to this cause.

The next general division comprises the hazards due to the operation of machinery. These include friction of machinery, heated bearings, accidents and breakages, over-heated boilers and stacks adjacent to inflammable substances, and the presence of foreign substances in fast-running machinery. For example, in the pickers used in cotton and woolen mills and in cotton ginning machines, sparks caused by the presence of stones, buttons, cartridges, etc., cause a great many fires. In cotton mills, 984 out of 1,683 fires were caused by friction and the

presence of foreign substances in machinery, and in flour mills, 477 out of 2,616 fires were caused by friction in machinery.

The third division comprises the hazards incident to processes. Among these are hazards arising from dry kilns, roasting furnaces or ovens, use of inflammable mixtures for painting or japanning, the compounding of combustible and explosive chemicals in drug and paint mills, the improper or careless handling of heated substances, such as molten metals or the dried fertilizer just from the dry kilns, the use of fire heat under kettles, etc., and the production of various explosive gases or mixtures, as, for instance, dust in flour mills and starch factories or benzine vapor in furniture factories or japanning ovens.

The fourth, and so far as the number of losses and value of property are concerned, by far the most important of internal physical hazards, is due to the various processes and kinds of apparatus used for purposes of heating and lighting. It is quite natural that the process of heating—which usually means the actual use of fire—should make more losses than any other cause; yet it is a sad commentary on American methods of building and on American laws concerning building, that defective flues should be responsible for twice as many fires as any other one physical or known moral hazard. This cause also is responsible for a greater property loss than any other. Flues may be defective in construction, as when wooden joists or timbers are allowed to pierce their walls, or when unprotected holes are left by careless masons through which sparks or flames may escape. They may become defective by settling or cracking, due to insufficient support, or because the building is moved or shaken in consequence of a tornado or wind storm or if struck by lightning. In 1902, over 14,000 fires, or 13 per cent. of the total number of fires, were attributed to defective flues, and the total property loss

resulting was over \$11,000,000. Other fires due to methods of heating were caused by hot ashes and coals, improperly deposited in dangerous places (barrels for example), or through carelessness or defective apparatus allowed to come in contact with combustible substances. Still other fires were caused by hot stove and furnace pipes and by over-heated stoves and furnaces, and the list includes the fires caused by steampipes passing through or adjoining unprotected wooden surfaces. In all, about 20 per cent. of the total number of fires are directly traceable to the use of fire for heating purposes.

The fires due to methods of illumination included in 1902 over 400 caused by candles, over 3,700 from accidents to lamps, resulting in more than \$2,000,000 of losses, 970 from gas jets and over 1,000 from electric wires, which are classed with the methods of illumination for convenience, though electric wires are often used to convey power. The losses due to the use of electricity are larger by far in amount than those due to any of the other means of illuminating, chiefly, no doubt, because electricity is now so generally used in buildings and localities where large values are collected, while candles, lamps and even gas are now principally used in dwellings, small stores and small factories; furthermore, fires of electrical origin are often not discovered until they have gained considerable headway. The value of property destroyed by fires of electrical origin in 1902 was \$12,000,000. Fires due to other methods of illumination were more than four times as numerous as the fires of electrical origin, yet the ensuing loss was slightly below \$5,000,000 or less than one-half the amount due to use of electricity.

The fifth general division of internal hazards includes everything not already classified. The various fires due to accidents and carelessness find a place here. The list includes oil stove

accidents, fires from matches, which caused in 1902 four thousand fires, with a loss of over one and half million of dollars, children playing with fire, cigars, cigarettes and tobacco pipes, with a record of 1,100 fires in 1902, and the numerous other causes of comparatively smaller importance which have not already found mention.

All of these classes and sub-classes of hazards might still be almost indefinitely re-subdivided, for new hazards and new manifestations of old hazards are to be met with daily. If the causes of the 76,000 fires which occurred in 1902 could be ascertained with accuracy, each would be found to differ in some respects from every other. When all ascertainable hazards have been classified and the causes for fire set forth so far as we can ascertain them, there yet remains about 16 per cent. of all fires for which the causes cannot be discovered. It is not strange that the causes of many fires escape detection. In the first place many incendiary fires, if fully successful, destroy all traces of origin. The same is true of fires caused by electric wires, defective flues, spontaneous combustion, sparks, and many other obscure or hidden causes. In fact, whenever fires acquire such proportions before their discovery as to prevent subsequent inspection of the points of origin, or when the amount of destruction is sufficient to obliterate any indication of the cause (in cases when the origin is not witnessed) that cause will usually remain a mystery. It will be readily seen that this very considerable percentage of fires of unknown origin renders anything like an exact estimate of the effect of the various hazards impossible, and one of the difficulties of making a scientific and accurate apportionment of rates is therefore at once obvious.

The foregoing must be considered to be merely a rough general index of the numerous heads included in the very important subject of physical hazards. As the profession of

fire underwriting progresses and develops, the investigation and safeguarding of these hazards is more and more passing into the hands of experts, and, indeed, the subject is one sufficiently comprehensive and complex to afford a life work to students of the best technical training.

In this discussion we must now pass on to the consideration of the other grand division of hazards, usually called moral hazards. Moral hazards arise from the personal (including the financial) circumstances which affect risks. They are indefinite, incapable of analysis, separation or estimation, yet they are of the greatest importance in fire insurance. Some authorities believe that more fires are attributable, directly or indirectly, to moral or personal causes than to physical, and, while any such attempt to estimate the results of moral hazards must be largely conjectural, it is quite certain that they are accountable for a very large percentage of the fire waste. Moral hazard is said to exist in regard to a particular risk whenever a benefit, real or supposed, direct or indirect, would ensue to any one, especially the owner, by reason of the destruction of the insured property; also, and nearly as important, whenever for any reason no one has a strong interest in its preservation.

In other words, not only the desire to destroy, but also the lack of a strong desire to preserve, creates moral hazard, so called, and it is hard to say which condition is the more dangerous. The prospect of a profit from fire or the absence of a financial incentive to preserve a risk make it impossible for an insurance company to rely upon the exercise of that due care and diligence for its protection which is essential if business is to be transacted at a profit.

There are various ways in which moral hazards may arise which can be named and described. The possibility of their occurrence is patent to every one as soon as they are named,

but to find out or know in advance that any of them exist in connection with a given risk is often beyond our powers. Hence losses due to such causes cannot be avoided. Any cause which seriously injures the value of a risk or diminishes its productivity is likely to create moral hazard, if the risk be well covered by insurance. Therefore insurance companies avoid risks where for any reason there is doubt as to value or productivity,—summer hotels which have not succeeded, buildings which are likely to be condemned, mines where paying quantities of ore have not been found, flour mills where the water power has failed, etc., etc. All of these are pertinent examples. Any man would prefer money equal to the cost of such properties to the properties themselves. So, too, experimental properties,—temporary branch stores and new ventures of every description which have not demonstrated their earning power, must be handled with greatest caution. The mere fact that capital has been invested does not always indicate that value exists, and the rule of prudence and of indemnity as well, viz., “no profit to the assured from fire,” points the way to the wise rejection of risks where this question of value is involved. Such risks are not only likely to be wilfully fired by a dishonest insured owner, but, even in the hands of honest men, are not likely to receive that assiduous care and watchfulness which men give to their successful enterprises. Indifference and carelessness differ only in degree from the actual desire for the destruction of property so far as the probability of its accomplishment is concerned.

In view of the considerations mentioned above, insurance companies look with disfavor upon those risks where the amount of insurance carried exceeds the value of the property and are inclined to fear a moral hazard in connection with them. It goes without saying that such a condition would be dangerous where the owner is dishonest, and where he is

honest the fact that no personal loss can come to him from a fire is likely to induce that carelessness and lack of precaution which constitute one species of moral hazard.

Financial embarrassment and the pressing necessity for ready cash often create the most serious kind of moral hazard. A merchant with notes overdue or who sees failure ahead, or a farmer who cannot pay interest on his mortgage, is often in a position where the ready money obtainable from his insurance policies, even if not equal to the value of his property, would nevertheless help him tide over a pressing emergency.

Another situation which frequently involves moral hazard is when property of any kind becomes involved in litigation or where there is dispute as to ownership. In such cases divisible cash is much more available than property which must be liquidated, and everybody interested might well be benefited by a fire which would simplify the settlement of a dispute. Moreover, the enmities aroused in the course of litigation are themselves a source of danger.

The foregoing remarks apply to moral hazards which arise in connection with the owners of property, but there are species of moral hazard which do not involve acts or neglect of the owner, but spring from the acts or desires of others. These chiefly arise from the ill-will of those to whom the property owner or his property is in some way objectionable, or who have been or are likely to be injured by the nature of the property itself or the kind of work carried on therein. Any building, such as a fertilizer factory, contagious hospital, dance hall or saloon, which interferes with the peace and enjoyment of a neighborhood or hurts the value of surrounding property, offers a constant temptation to those who may be injured by it. Its destruction would be a distinct benefit to them. Similarly, any property owner whose disposition and

practices are such as to make numerous and bitter enemies is likely to feel the results of the hostility thus aroused through the burning of his property.

It will be seen from the preceding pages that the elements which go to make up hazards to which insured property is subject are numerous, complicated and varied. We will now endeavor, briefly, to survey the methods used by insurance companies to measure these hazards, i. e., to fix rates or prices.

Moral hazards may be dismissed at the outset; they cannot be measured or charged, for usually they cannot be ascertained till after a fire. Their existence, however, greatly increases the fire waste and is responsible for the greater part of what are known as basis rates, to be later described, i. e., the irreducible foundation, incapable of analysis, upon which all systems and every schedule of rates are based.

In the early part of this course the principle was laid down that fire insurance is a tax,—a tax levied for a specific purpose,—to repair the fire waste. All agree that taxes are necessary evils, but there is anything but unanimity as to methods for imposing and collecting them. No other function of government causes such bitter debate, acrimonious dispute, public clamor and individual discontent as this matter of taxes. There is perhaps no other obligation resting upon citizens that is so constantly and ingeniously evaded.

Now it is by means of a graduated scale of rates or charges that insurance companies collect the enormous sums required to recoup the provident among the losers by fire, and there is the same diversity of opinion, almost the same intensity of debate, among those who devise these rates as exists between protectionists, free-traders and single tax theorists. Moreover, from the public which is taxed arise the same clamors of discontent, the same charges of inconsistency, the same endeavors to lessen the individual burden which are to be

noted in the process of collecting ordinary taxes, and too often, as in the case of such taxes, these complaints have some reasonable foundation. Also, as in the case of ordinary taxes, it frequently happens that the most clamorous objectors and the most enterprising in securing relief are to be found among that number, who, if the truth were known, are taxed at too low a rate rather than too high. From the very nature of things these clamors and this discontent are inevitable, though as the process of making rates becomes more and more scientific and therefore equitable, we may hope that both the discontent and the reason for it may be greatly lessened. That there is some ground for the discontent, all underwriters will agree, for the task of apportioning with absolute correctness and fairness the fire loss among the various classes of risks and to each individual of a class, according to the hazard of each, is an absolutely impossible one. To even approximate fairness is enormously difficult. This is partly because of the absence of reliable data and the impossibility of obtaining them. There are, broadly speaking, no constant factors in the rating problem. In life insurance, rates to-day are frequently based upon a mortality table constructed from the experience of seventeen companies in 1838, and these tables are still found to be substantially reliable, but there are no unchanging mortality tables in fire insurance experience.

The proper basis for a table of rates, constructed on scientific principles, might well be thought to be the combined experience of a number of companies carrying similar classes of hazards during a period sufficiently long, and over a field sufficiently wide, to justify generalization. Such data have been hitherto unobtainable for various reasons, viz.: lack of uniform system of classification, lack of coöperation owing to the furiously competitive conditions under which the business is carried on, and finally and chiefly, the difficulty of properly

classifying those most numerous losses which result from fires communicated from one building to another, known as exposure losses, and those other numerous losses, the causes of which are unknown. Even were the necessary data obtainable and could they be properly segregated, their value as bases for rate tables might be open to question. In the last analysis the basis for the rate on any risk must be largely determined by the hazards, i. e., possible causes of fire, inherent in risks of the class to which it belongs. For example, the rate on a flour mill must be based upon the known dangers inherent to all flour mills, with such additions or subtractions as the peculiarities of the individual mill may make proper; but during the last forty years the process of milling flour has been revolutionized; instead of the old heavy millstones revolving slowly, we now have small steel rollers operated at a very high speed. Formerly, owing to the imperfect apparatus used, flour mills were so filled with dust that the air in them was very like a dry fog, impenetrable to the eye in many parts of the mill. This dust was inflammable to the extent of being explosive. The best modern mills contain machinery which practically eliminates dust. It would be hardly too much to say that all processes, from the time the wheat enters the mill till the flour is packed in bags or barrels, differ from those in vogue forty years ago. Probably it would also be within the bounds of truth to say that each year brings a new change in some part of the machinery or process. What is true of flour milling is true of most other manufacturing industries. One of the causes of the success of American manufacturers has been their willingness to discard old machines long before they are worn out for new ones better designed for their work, while foreigners cling to their old machines, both from unwillingness to change and from motives of false economy. A flourishing rubbish heap is often a sign of real progress.

Again, the various processes and machines which have come into existence in the effort to make valuable the waste products of various industries, have entirely altered the nature of many factories. For instance, in the case of packing houses,—in addition to the work for which such buildings were originally designed, viz.—the slaughtering, cutting, curing and keeping of beef, pork, ham, sausage, etc., there have been added the manufacture of fertilizer, of cooked canned meats and vegetables, the manufacture of medicinal extracts, and other processes too numerous to mention, each of which brings a new hazard to be estimated and accounted for in the rate.

Furthermore, there are certain changes in methods of heating and lighting and of using power, involving the use of gasoline, electricity, etc., which have greatly altered and are constantly, to a large extent, altering the hazards of the buildings where they are used. Every new machine, every new process, makes a change in the sum total of hazards and therefore the carefully collected data, showing the experience on any particular class of risks, may at any time by the invention of new machinery or by the discovery of a new process, chemical or otherwise, be rendered absolutely valueless, and the underwriter may be compelled to make new rates to cover hazards which have not endured long enough to furnish any experience whatsoever.

Difficult as the accumulation of proper data and the ascertainment of the fire cost of each class might be, and despite the necessity for frequent revision and reconstruction, owing to the changing nature of the factors involved, insurance companies might well undertake the task and endeavor to more closely ascertain the necessary basis of fire cost for each class of business as a foundation upon which to build a proper system of rates, were it not for the hostility of legislatures, and of the people as well, to any kind of combined

or associated endeavor to fix or maintain such rates. Such hostility, we must hold, arises from a failure to comprehend the true nature of insurance and the further failure to apprehend the principle that a properly constituted rate is chiefly made up of factors which are not in the control of underwriters and which cannot be correctly ascertained and formulated by them except through associated effort and combined experience. The attempt to cure inequalities and injustices which occur in the making of rates by legal process, springs from the same mental astigmatism which induces men to attempt by law to prevent fluctuations in the purchasing value of silver or of any other commodity. Fair, equitable and adequate rates are a prime necessity, not only for insurance companies, but for the insuring public, for in the long run the premium income must pay the losses. In other words, adequate security demands adequate rates. Impairment of security, an undoubted loss to policy-holders, must result from inadequate rates.

The foregoing remarks apply to the difficulties which attend the making of proper rates for various classes, but even greater difficulties are met when the attempt is made, as it must be made, to fix an appropriate rate for each individual of a class. In life insurance no such differentiation is attempted. Every man insured at age twenty-nine under the same kind of contract pays the same rate, and it is assumed that every insurable life at age twenty-nine has the same expectation. In fire insurance, however, no two risks are exactly alike and every detail of every risk must be examined and its contribution to the total hazards of the risk estimated. Moreover, in fire insurance many, if not most risks, undergo frequent changes and must therefore be re-examined and re-rated from time to time. It is this necessity for determining the proper charges and allowances for the numerous differences which characterize the construction, occupancy, location

and exposure, methods of heating and lighting and extent of fire protection, not only for every class of risks, but also for every individual of each class, which constitutes the greatest practical difficulty to be overcome in making a fair assessment of the fire cost.

Without trying to investigate the history of the various methods of classification which have characterized the business or to give any account of the differing processes for making rates which have been attempted from time to time by insurance companies, interesting and instructive as those subjects are, we will now proceed to take up a few of the systems and methods by which rates are to-day made.

Rates may be said to be made to-day by two processes: First, by what is known as the personal inspection or judgment rate system; and, second, by carefully prepared and more or less scientific schedules.

The judgment system of rating is rapidly giving way before the use of highly complex and specialized schedules. It is open to serious and obvious criticism, yet has in times past served a very useful purpose and is not without its good features. A few words will sufficiently describe it. By means of a more or less complete system of classification, companies ascertained in a rough way the average cost of many kinds of risks, and this information was put into the hands of their special agents or gradually absorbed by them in the course of their work. Formerly special agents did practically all of the work of making rates in company with local agents. When a town was to be rated, these average cost figures were used as basis or foundation rates. Usually towns were rated by committees of from two to five special agents who acted for all companies. No rule or regular method of procedure governs the making of rates under this system. The rates so made simply indicate the opinion or judg-

ment of the rate makers. Little attempt was made to analyze the factors which determined the judgment of the committee as to each risk. Nevertheless, since that judgment was usually the result of the experience and observation of many years spent in such work, the rates made were in many cases quite satisfactory and equitable to a moderate degree. No attempt was made to take account of minor differences, but all good features or defects of construction and exposure, and also all the hazards of occupancy and processes, were lumped together, and if, as a whole, to the mind of the raters, they were sufficient to appreciably differentiate the particular risk from the average risk of its class, a penalty was added to or an allowance was made from the average rate which experience had shown to be about adequate.

Such a system was fairly satisfactory during the years when buildings as a rule were in point of construction very much alike, but with the growth of improved methods of building, and with the increase and improvement of the apparatus for protection against fire, to say nothing of the great changes in business methods, such a system fails to properly discriminate between risks of the same class which may differ widely in many important respects. Moreover, the personality of the raters under the old system was a highly important factor—to such an extent, in fact, that different committees might produce quite different results when rating identical risks. The system of schedule rating which attempts to take into account the various features of construction, exposure, internal hazards and protection against fire, which are peculiar to each risk, obviates these objections, though itself, as will be shortly seen, open to criticism of another nature.

As already hinted, no perfect system of apportionment of the fire tax can be devised. On the whole, the system by schedules applicable to each class gives promise of develop-

ment into a means of fixing rates which will be much more equitable and satisfactory than any other method which has yet been followed, and there is reason for hope, with more perfect statistics and a better appreciation of the relative potentialities of the different hazards, that the various schedules will ultimately develop until they come to be universally recognized by the public as well as insurance officials as satisfactorily solving, so far as it may be solved, the complex problem involved in making rates.

In the early days of insurance history two rates only were known,—one for buildings of brick construction, another for frame, and these rates applied regardless of occupancy. Gradually, as the hazards of the different kinds of business came to be appreciated, a system of classification was begun which has been growing and enlarging until to-day, nor has its growth or enlargement by any means reached its limit. At the present time many companies divide their risks into over a hundred classes and further sub-divide each class according to construction, i. e., whether brick or frame, and according to the class of the town or city, viz., whether protected or unprotected, in which the particular risk may be located. From their experience with these classes approximations are made by companies of the actual average cost of insuring each class, but in order to fix the prices for the individuals of a class there is required a mass of diagrams, statistics and other data, showing the particular features of each risk, which are almost infinite in number. This will be apparent from the statement that these data include more or less complete descriptions of practically all buildings in the central portions of all cities, towns and villages of any size in the United States.

Companies as a whole are estimated to expend over a million of dollars per annum for rating purposes. Single companies expend as much as \$20,000 per annum for maps alone.

The prime requisite for a system of rates is that it shall so far as possible be uniformly equitable; that is, it must compel each class of risk and each individual of the class to pay its proper proportion of the fire tax. To approximate such a result, however, not only are the data before mentioned necessary, but the amount of insurance to be carried on each risk must be known. At least nine tenths—Mr. Dean says nineteen twentieths—of all losses are partial. The great majority are small as compared with the value of property insured. It is evident that, in case of a partial loss destroying less than one half the value of an insured property, a man who carries insurance to, say, 50 per cent. of the value of his property, secures the same amount of indemnity as the man who carries insurance amounting to 80 per cent., though the latter has paid a much heavier tax. It follows that where, as is usually the case, there is a fire department and water-works, the man who carries insurance amounting to 80 per cent. of the value of his property is entitled to a lower rate than the one who carries insurance amounting to but 50 per cent. of that value. For this reason all properly devised schedules or tariffs for making rates are based upon the use of a co-insurance clause, usually the 80 per cent. co-insurance clause, which compels insurance equal to 80 per cent. of the value to be carried, and penalties in the shape of higher rates are imposed where a lower percentage of insurance is carried. No other means has ever been devised or is likely to be devised which so fairly and automatically apportions the insurance tax according to the value of property, just as ordinary taxes on real estate and personal property are supposed to be apportioned. One way of stating the principle involved is to say that the expectation of salvage is one of the factors involved in making rates.

The schedule system, as its name implies, makes rates by applying to classes of risks and to individual risks certain

predetermined charges and credits based upon the various factors of construction, occupancy, exposure and protection against fire. In practice, in the several states or districts of the country, many different schedules for all classes of risks are used, though more than one attempt has been made to evolve a system of rating which might be everywhere applicable. We shall not be able even to mention many of these numerous systems, nor is it necessary, since for the most part they differ in detail rather than in principle.

In the case of such simple classes as dwellings, schools and churches, where the hazards are practically the same for each individual, the class rate is applied to every risk, differences being made only as between brick and frame and those under or beyond the protection of an efficient fire department.

The schedules used in rating the different manufacturing classes, such as wood-workers, packing houses, flour mills, etc. (usually called special hazards), are made up substantially according to the following general plan:

First. The standard or ideal building of the class in question is described. This building is standard, not only in arrangement and construction, but often as to its equipment for extinguishing fire. A basis rate is then assumed for a risk equalling the standard. This basis rate, while arbitrarily fixed, is nevertheless the expression of the judgment of expert raters as to irreducible foundation of hazard incapable of analysis and made up of the numerous intangible and incalculable things (including moral hazard and an allowance for unknown causes), which is thought to be inseparable from any risk of the particular class under consideration, no matter how perfect its structure and arrangement may be.

The basis rate having been determined, the various defects in construction, dangerous or improper factors of arrangement, and deficiencies in the nature and extent of the appa-

tus for fire protection are listed with a table of, usually fixed, charges for each; usually, too, there are some credits mentioned for extraordinary features of equipment or construction too infrequent to be conveniently included in the description of the standard. Provision is also made in such a schedule for a further credit or charge for the presence or absence of the 80 per cent. co-insurance clause, or some other percentage co-insurance clause, in the contracts. When a flour mill, for example, is to be rated, the assumed basis rate for flour mills is used as a starting point and to it are added the various deficiency charges which may be found on inspection to pertain to the particular mill to be rated. From the rate thus obtained a deduction is made for any credits to which the mill is entitled. When the rate thus made up is ascertained, the price to be charged is fixed by the allowance or charge for the use of the co-insurance clause above referred to.

Many of these schedules are so minute and intricate as to require the services of an expert rater for their application, and therefore, and also for the sake of economy and uniformity, these schedules are applied to special hazards by men skilled in their use acting for associations of companies in the various districts. The factor of exposure (sometimes of great importance) may be covered by more or less elaborate charges, as shown on some of the sample schedules in your hands; or more frequently in the case of special hazards, together with other additional objectionable features, is left to the judgment of the rater. This is because special hazards, as a rule, are more dangerous to their surroundings than endangered by them. Moreover, they are usually more or less isolated as to location, hence their chief hazards are internal. While, on account of the numerous and often hazardous processes involved and because inflammable material is frequently handled, these risks might be supposed to present unusual

difficulties to the rater, they are on the contrary easier to rate with a reasonable degree of satisfaction, both to the companies and the owners, than the apparently more simple mercantile risks, which so far exceed them in number and value. The different processes and dangerous materials are, in the case of special hazards, conspicuous, and their hazards comparatively obvious, hence their appraisal or estimate may be the more easily made. In these schedules many of the more serious defects are often penalized by very severe charges in order to compel property owners to remedy them; indeed, one of the chief merits of the schedule system of rating as a whole is that it encourages safe methods of construction, arrangement and protection, and recognizes them in the rates.

Another and the chief argument usually advanced in favor of schedule rating is that, since it lists the various defects of each risk and the charges made for the same, property owners may know why the price which they are compelled to pay for insurance differs from that which may be paid by their neighbors, and hence may realize that they are not suffering from the effects of arbitrary discrimination or of personal judgment of the rater, since it is evident that the rate on their own property is governed entirely by its own faults or merits.

In some states or districts as many as thirty different schedules for different classes of risks are in use.

The rating of mercantile property, which comprises by far the most important class, both as to the number of risks and value, with which insurance companies have to deal, is the most difficult technical task which confronts the underwriter.

There are many schedules in use for this purpose in various parts of the country, most of which, however, have many points of resemblance. The following may be taken as a

description of the average schedule of this kind used in towns and cities of moderate size—those used in the largest cities are more elaborate.

In most states and districts the cities, towns and villages are divided into classes—commonly from four to six in number—according to the amount of protection afforded by the water works and fire department of each. Two basis rates—one each for brick and frame mercantile buildings—are then adopted for each class of towns. The basis rate is usually in the case of brick buildings predicated upon an assumed type of building adopted for that purpose and described in detail in the schedule. In order to determine the rate on any one building or its contents the proper basis rate is taken as a foundation, and to it are added the fixed additional charges made necessary by its structural defects, which are usually listed with more or less minuteness in the schedule, a stated charge being made for each defect. To the rate of the building thus determined additions are made for the exposure hazards from adjacent risks according to the table or rule provided in the schedule. From the figure thus obtained a deduction is made on account of credits allowed for those features of construction, or of individual fire protection, which may be permitted by the schedule. The resultant rate is called the unoccupied building rate. It is then further increased by a charge made on account of the nature of the occupancy, such, for instance, as a drug store or a dry goods store, and thus becomes the final building rate.

The rate on the contents is then made, frequently by an addition to the building rate, named in the schedule itself as applying to the particular kind of contents under consideration; but more often all kinds of contents are classified roughly into from two to four or five classes, and an additional charge, over and above the building rate, to be applied to

the contents, is provided for each class, and is used in every case where contents which may be embraced in that class are found.

The foregoing applies to the rating of brick mercantile buildings and their contents. Rates on frame mercantile buildings are usually made by a more simple process.

In the first place, all frame mercantile buildings are esteemed to be substantially alike for the purpose of insurance, the differences in point of construction which are recognized being confined to metal roofs and brick or iron coverings for side walls. A basis rate is agreed upon for frame buildings in each of the various classes of towns into which a district may be divided, and charges are made for occupancy and exposures. These charges, so far as occupancy is concerned, are usually very few in number. Where frame buildings are concerned the rate on contents is seldom if ever higher than the rate on the building itself, and very often less than the building rate, because a high rate on such a building is usually due to a heavy exposure hazard, which, so far as the contents are concerned, may be overcome by their hasty removal when the danger of fire is imminent.

The treatment of exposures in these numerous schedules shows great variety of practice, especially as regards brick buildings. In fact, for the most part this important feature in the rating of mercantile buildings and contents has had very inadequate treatment. When brick buildings are exposed by other risks, one method, very frequently used, is to make a fixed charge for unprotected openings in side walls without regard to the character of the exposure. Another is to add to the rate of the exposed risk, where there are unprotected openings, some percentage of the rate of the exposing risk, according to its distance from the risk to be rated.

Many tariffs, however, leave the question of exposure charges to the judgment of the rater, for it is difficult, especi-

ally in the case of brick buildings, to provide a satisfactory and workable rule for such charges in a schedule designed to be comparatively simple. For frame buildings there are usually definite rules in the shape of a heavy fixed additional charge over and above the basis rate for each frame building within a given distance—usually 20 feet—of the building to be rated. Thus, if a frame building unexposed carries a basis rate of $1\frac{1}{2}$ per cent., $\frac{7}{100}$ of 1 per cent. will be added for every frame building exposing it within 20 feet, and also for every frame building which goes to make up a continuous row of wooden buildings up to some arbitrary limit, such as 8 per cent., which is assumed to cover the most dangerous hazard which can be created by a combination of frame mercantile buildings. It will, of course, be understood that the basis rates, as well as the increments of charge made for exposures, vary in the schedules used in different parts of the country.

As hinted before, two attempts have been made to evolve systems or schedules for rating mercantile property which might be universally used. The first of these schedules was prepared by a committee of eminent underwriters under the chairmanship of Mr. F. C. Moore, then president of one of the largest American insurance companies, and is called the "Universal Mercantile Schedule." It, or some modification of it, is used in many of the large cities of the country to-day, including New York, Cleveland, Denver and many others, and it is, so far as results yet obtained are concerned, the most important of any of the tariffs which have ever been issued. It is also, of all rating schedules, the one which has been most carefully and minutely elaborated and adjusted to meet the almost infinitely varied combinations of the factors of construction, occupancy and protection which are to be found in the mercantile buildings of a large city.

This schedule was a great advance beyond anything before known in the history of scientific rating and has exercised a

very important and growing influence upon the framers of other schedules subsequently made, many of which are but imperfect adaptations of the Universal Mercantile Schedule. It is an extremely complicated and intricate schedule and cannot, therefore, be described or discussed in detail in the limits of this paper. A few extracts from the writings of Mr. Moore in regard to it will be given, which, in connection with what has already been stated in regard to schedule rating, will enable some idea of its purpose and scope to be formed: (It is suggested in this connection that the student consult Mr. Moore's book "Fire Insurance and How to Build.")

"The mere fact that there are more than a hundred features of construction in a single building which should enter into the consideration of its rate, irrespective of nearly forty features of its city or environment, nearly forty more different features of fire appliances, to say nothing of more than a thousand possible hazards of occupancy; and the further fact that no individual knowledge is equal to the task of putting a price upon so many items, nor any individual memory capable of remembering them, proves, without further demonstration, the necessity not only of conference to secure combined knowledge for fixing prices, but, also, a printed record or schedule, to prevent omissions or mistakes."

"In 1891 a committee of four underwriters was appointed to prepare a schedule for rating mercantile risks which should be universal in its application throughout the country. Early in their deliberations they reached the conclusion that such a schedule should be formulated upon the following lines, and that it should recognize:

First: A key-rate—as to which various cities and towns differ.

Second: Charges for variations from standards of construction—which ought to be the same everywhere.

Third: Charges for hazards of occupancy—which ought to be the same everywhere.

Fourth: Charges for insuring contents according to their susceptibility to damage—which ought to be the same everywhere.

Fifth: The variation of these charges, according to the construction of the building. Clearly the same amount should not be added, even for the same stock, to two different buildings where one is an exceptionally good building and the other an exceptionally poor one; there should be more difference between the building and stock rate in the one case than in the other.

Sixth: The treatment of fire extinguishing facilities, proximity to hydrants, etc., for the particular risk rated, according to circumstances; it being clear that if the risk is within reach of hydrants, steam engines, etc., and on an eight-inch or larger water main, it should rate differently from another of like kind, even in the same town, if the other risk be not so fortunately located."

"So in other items or features of the schedule, the committee found it necessary to go into every detail of hazard, leaving as little as possible to the judgment of a rating expert, so as not only to save his time and thought at every stage of the rating process, but to prevent, also, those inconsistencies of rating in risks of one and the same hazard, resulting from fluctuations of judgment, which so often produce dissatisfaction on the part of owners and result in appeals for legislative interference with rating organizations."

"First: A standard city was conceived and described. It involved level and wide streets, gravity water works, adequate pipe service and other features fully explained.

"Second: A standard building was described, which may be regarded as a model of ordinary construction, not fire-proof.

"Third: A key-rate.

"The basis rate or starting point for rating a standard building in a standard city was fixed at 25 cents, after careful consideration of the experience tables of the companies."

Since buildings of this class are to be rarely found, this was of course pure assumption.

"From this starting point or basis rate of 25 cents, and to obtain the key-rate of any city, or that figure at which a standard building in the city should be rated, additions were made according to the deficiencies of the city as to water works, fire department, building laws, inaccessible or narrow streets, etc., etc. This key-rate, so determined, is thereafter used to obtain the rate of any building in the city to be rated by adding to it charges for its deficiencies from the specification of a standard building."

For the purpose of rating contents of buildings and in order to make occupancy charges, no fewer than 1,287 varieties of contents are listed, each with its appropriate fixed charge to be added to the building rate; and also a different charge to apply to the contents themselves, over and above the final building rate. Moreover, a separate application for credits for fire protection is provided for the contents as compared with the building.

"No schedule should be framed upon a basis which does not recognize a certain named percentage of insurance to value."

"The universal schedule, however, does not enforce or require any particular amount of insurance, but simply adjusts itself (by reductions from ascertained rate according to stipulated account of co-insurance) to whatever amount the property owner elects to carry."

The chief objection to this, or in fact to any system of schedule rating, is the necessity for the constant use of assumptions, not only in determining the basis rates, but in making

the charges, for each defect of the construction, or for occupancy, which go to make up the final rate.

A great deal of time and a vast amount of comparative research has been expended in the endeavor to properly appraise the dangers incident to all the various features of construction, protection, occupancy and exposure, yet it is manifestly impossible from any obtainable record of experience to assert that a retail drug store, for instance, will make proper an addition of exactly 10 cents to the building or an addition of exactly 50 cents to the rate on contents over and above the building rate in all cases.

A tariff has been devised by Mr. A. F. Dean, of Chicago, called by him a "Mercantile Tariff and Exposure Formula for the Measurement of Fire Hazards," which differs radically in many respects from the "Universal Mercantile Schedule," and which has come into very general use in the western states. This tariff is intended to render some of the defects just mentioned less important, and is, moreover, founded on a different conception of the problem of rating. Instead of endeavoring to establish a basis rate for a standard risk in a standard city, Mr. Dean's tariff divides cities into six classes, beginning with villages which have no protection whatever and which are known as towns of the sixth class. This is a very suitable basis for such a classification since its definition is simple, its existence real and unchanging; while on the contrary our ideas of a standard city are likely to change from time to time. From this as a starting point towns are graded according to their protection up to the first class, which includes all cities having protection in the way of water works and fire department of exceptional completeness and efficiency and better than those classified under Sections 2 to 6 inclusive. Moreover, for the purpose of rating, provision is made for the adoption, as a starting point,

of a one story brick building of ordinary construction located in a town of the sixth class. This kind of building is fully described in the tariff. Such buildings are common in towns of that class. However, this tariff does not attempt to name the basis rates. They are supposed to be adopted or selected in each state or district by raters who have had experience therein. This does away with the necessity for making ideal standards and estimating basis rates therefor. Concerning this matter of adopting basis rates Mr. Dean holds that the experience of underwriters enables them to more readily estimate a proper rate for an ordinary building, such as may be found in great numbers, than for an ideal standard, which represents a class with which insurance companies have had very little if any experience. Nothing more simple could be thought of as affording a starting point or basis rate than the one story building selected by Mr. Dean; nor could any risk be found for which experienced underwriters could more readily or intelligently name a proper rate.

This basis rate having been decided upon, additions or deductions are made for good or bad features of construction, occupancy, protection or exposure, but since the average building is taken as a starting point these charges and credits will be fewer in number than where a standard building is taken as the foundation, and charges made for the numerous deficiencies which every ordinary building has. Moreover, instead of making these charges and credits by means of arbitrarily fixed amounts, the additions and subtractions are made by the percentage method. For example, in the "Universal Mercantile Schedules," ten cents is added to the rate of a building having a retail drug store therein, whereas in Mr. Dean's tariff a percentage of the previously ascertained building rate is added for this occupancy and a similar method is used in making charges and credits for various features of con-

struction. The system employed for estimating the proper percentage additions to the rate on account of occupancy is especially ingenious and logical—two additions are made for most occupancies, one for the causative hazard of the contents, i. e., the danger which their presence begets, the other for the extent to which the contents are likely to aid the spread or intensity of a fire.

Similarly, the percentage plan is followed for establishing basis rates for one story brick buildings in towns of the other classes: that is, the basis rate for a town of the third or fourth class would be ascertained by deducting a certain percentage from the basis rate selected for a similar risk in a town of the sixth class.

The chief object in adopting the percentage system for variations in the factors affecting rates is that it preserves the relativity of charges and credits which are made in rating. It is manifest that where a basis rate, for example, is 40 cents, an additional charge of 10 cents for occupancy on account of a drug store is much more severe than where the basis rate is, say, 80 cents. With the charge for a drug store occupancy of 10 per cent. on the basis rate, however, this inequality would be obviated. Again, the charge of 12 cents for open, unprotected elevators in a building of moderate area and, say, three stories in height, and which in consequence of these features enjoys a low rate, is relatively very much heavier than the same charge in the case of a large six or seven story building of great area which bears a high rate. In the latter case 12 cents would probably be about one-tenth of the total building rate, while in the smaller building it would be at least 20 per cent. Moreover, an open elevator in a building of unusual height or area is a much more serious defect, and is likely to be responsible for much greater destruction of property than a similar elevator located in a small building of

moderate height. The same reasoning might be applied to the credits or deductions made for favorable features. In support of his views on this subject Mr. Dean says:

"If, under the law of averages, a thousand buildings of given construction, occupancy and protection will show a given ratio of loss to value during a given period, under the same law a thousand flues, hatchways, skylights, well-holes, wooden ceilings, or other parts of the building, of given construction, will each contribute its unvarying quota of this ratio, hence the several parts stand in a position of unchanging relativity, not only to the whole but each to the others. Fire hazard is, by nature, a network of relativity. In constructing a basis schedule we necessarily select certain features of hazard as separable and attach to each of these a charge, while to the residue consisting of unanalyzable parts we attach a lump charge and call it a basis rate. There is no intrinsic difference between the charge we call a basis rate and the other charges excepting that it includes all things too obscure, indefinite or unimportant to schedule. If under the law of averages the relativity between the whole and its parts does not change, and the relativity among the several parts themselves is constant, it follows that each charge bears an unvarying relation to the basis rate, or, conversely, the basis rate a constant relation to the other charges. This being the case, it is false logic to treat the basis rate or any of the charges as a dissociated element of hazard, for every change in basis rate or charge involves a disturbance of their mutual relativity. The real question in establishing every charge is, What ratio of the total loss will this feature of hazard under the law of average probably contribute? When this ratio has been established by judgment and experience, it should take its place in every schedule as a fixed ratio bearing a constant relation to the whole and its several parts."

Under this tariff the rates on the contents of brick buildings are established through a differential added to the occupied building rate. This differential is based upon the damageability of the contents by water, smoke, heat, breakage, etc., as the result of fire, and represents the relative value of fire department protection to contents as compared with its value to the building itself. The tariff contains a table of differentials referring to about four hundred different kinds of contents, and further graded to correspond with ten different sets of basis rates, each set including a basis rate for a town of every class. These differentials are also arrived at by the percentage method, by averaging the differentials contained in many previous tariffs made for unprotected towns and then subjecting these differentials to an ingenious scale of percentage comparisons with the building as affected by the various grades of fire protection, according to the theory that the greater the damageability of the contents the less valuable to them—as compared with the building—is the protection against fire afforded by water works and fire departments.

A separate schedule based upon similar principles is devised for frame buildings, by which rates for frame buildings and their contents in a city or town of any class may be readily ascertained when once a basis rate has been adopted for an ordinary shingle roof frame building in a sixth class town. One important difference between the brick and frame schedules to be noticed is, that the differential for contents in the case of exposed frame buildings depends upon their removability instead of their damageability, and a table of contents graded according to their removability is provided.

The matter of exposure charges and hazards is treated in a separate department of the tariff called the exposure formulae. These formulae enable the rater to make additions to the rates of both brick and frame buildings and their contents on

account of exposure hazards by means of a highly ingenious exposure table graduated with reference to the construction of buildings, the distances between risks which affect each other, the amount of fire department protection, and the hazards of the exposing risks. This table is also made up on the percentage system, each risk radiating a percentage of its own rate or absorbing a percentage of the rate of the adjoining risks. The theoretical considerations upon which this table and its applications are based are given below in Mr. Dean's own language:

"External exposures are classified under three heads:

"a. Radiated exposure, consisting of the proportion of its own hazard a risk radiates toward exposed risks.

"b. Absorbed exposure, consisting of the proportion of radiated hazard absorbed by an exposed risk.

"c. Transmitted exposure, or the proportion of the hazard a risk absorbs from one side, that is transmitted by it to a risk on the other side.

"Under the above classification, it is proper to bear in mind:

"First: That every exposing risk radiates some ratio of its own hazard towards exposed risks.

"Second: That every exposed risk absorbs some ratio of this radiated exposure.

"Third: That every risk transmits some ratio of the hazard it absorbs.

"Fourth: That radiated, absorbed, and transmitted exposure are all modified by structure, clear space, and fire department protection.

"In view of the numerous ratios and *ratios of ratios* found in the problem of measuring exposures, the necessity for some fixed standard of comparison is clear, because a standard is the first essential in all measurement—it is equally clear that as ratios are to be measured the standard must be a ratio and

not a quantity. Again, if we view exposure from the standpoint of cause and effect, it is evident that radiated exposure is to be taken as cause; hence it is necessary to select some ratio of the hazard of the exposing risk as a standard.

"In selecting any standard of measurement, it is proper to choose that which is most generally available and most free from change. These qualities are found in the greatest degree, perhaps, in the exposure of frame buildings by frame buildings. In existing tariffs, there is substantial agreement in granting that a frame building transmits all the exposure radiated towards it by other contiguous frames, and while there is a considerable diversity in the ratio of radiated exposure in the several tariffs, they approach nearer to uniformity in this ratio than in any other feature of exposure. An examination of different state tariffs shows a range of exposure charge in unprotected frame rows from about one-third to one-half the hazards of the exposing risk. The average of all tariffs approximates closely to 40 per cent., while under the different grades of protection this ratio decreases in proportion to the protection.

"It can hardly be disputed that, under like protection, like buildings radiate like ratios of their own hazard, and if this be true the standard of radiated exposure under any given grade of municipal protection should be the same everywhere; hence all tariffs should agree in the adoption of a common standard."

Whatever may be thought of the brick and frame schedules, and though founded upon scientific principles and worked up according to scientific methods they will, undoubtedly, be criticised as to details, it is the writer's belief that the exposure formulae, at least, will come to be recognized as exhibiting the most satisfactory, logical and adequate treatment known up to this time, of this highly complex and

hitherto maltreated department of the science or business of making rates for mercantile risks. A detailed explanation of them is impossible within the limits of this paper, which, indeed, must be considered as an introduction to the study of rating systems rather than an exposition of their methods and practice. Moreover, some little study is required in order to understand the use, or to appreciate the great value of these exposure formulae. Nor would it be possible for any one without large experience to realize the difficulties which must be overcome in any successful attempt to construct a logical and workable scheme for the proper measurement and distribution of exposure hazards. Mr. Dean's tariff formulae as now published are intended for use in towns and cities of ordinary size and would require additional elaboration for use in the largest cities. There is no reason why tariffs or schedules based upon the same principles should not be made for all kinds or classes of risks, manufacturing as well as mercantile.

LOSSES AND ADJUSTMENTS

MISCELLANEOUS

BY RICHARD M. BISSELL

In a previous lecture some account was given of the various hazards or causes which are responsible for the fire loss, and the relative activities of these causes in producing fires were described. We now come to look at the fire waste from a different point of view and shall consider very briefly the distribution of fires and of the losses ensuing therefrom, not only as to location and time, but as to the different classes of property affected.

Speaking in a very general way, we may state that fire hazards in the greatest numbers and in their most active states are to be found in those centers of life where the commercial and manufacturing activities of men are most varied and most congested, and where these activities are carried on with the greatest zeal and stress. It is therefore to be expected that in our large cities should occur a great proportion of the total number of fires, and the facts justify this expectation. In them also the most serious destruction of values occurs. The multifarious activities above referred to not only create numerous causes for fires but are also responsible for the aggregation of enormous quantities of highly valuable and destructible commodities and buildings containing them. Those districts of our large cities which are most advantageously and conveniently located for commercial and manufacturing pursuits, tend to attract to themselves the factories, stores, and warehouses wherein are housed the machin-

ery and goods which make up the chief material wealth of such communities.

These districts are chiefly determined as to their areas, outlines, and sub-divisions by various circumstances connected with the topography and gradual development of the cities wherein they occur, the most important controlling circumstances being those which arise in connection with receiving and shipping facilities; as, for example, proximity to the water front in a sea port, or to the railroad terminals in an inland city.

In view of these considerations, it is to be expected that we should find such crowded areas—or congested areas, as they have come to be called—arranged without much regard for the danger of sweeping fires. The most important factors of arrangement creating this danger are narrow streets, across which flames may readily leap, and city blocks so large that they encourage either the erection of buildings of great depth, in which fires cannot well be fought, or render necessary alleys or courts for light and ventilation, which greatly aid the rapid spread of fire.

Were it not for the various public and private appliances for extinguishing fires, and those devices for hindering the communication of fire, which were described in the lecture on Fire Protection Engineering, not one of the congested areas of our large cities could endure a year. As it is, the frequency of disastrous conflagrations in such centers compels recognition of the fact that the danger inherent in the juxtaposition of vast quantities of inflammable material in these centers does not receive anything like necessary or proper attention from the public at large, the legislatures or other governing bodies. It would seem that ordinary prudence should induce individuals and communities to take all possible precaution against a constantly threatening peril of such vastly destruc-

tive possibilities; and yet a careful inspection of the crowded portions of all of our large cities will reveal countless defects in construction, negligences in precaution, and inadequacies in protection which, when realized, give cause—not for wonder at the number and extent of the conflagrations which do occur—but rather for surprise that they do not occur in greater numbers.

The recent conflagration at Baltimore gives a very good example of how the crowded arrangement of a business district, poor methods of construction, and the non-observance of available means for preventing the spread of fire from one building to another, make ready for widespread disaster. Baltimore was, in some important respects, better equipped for fighting fire than most cities of its size. Its water supply was ample and did not once fail throughout the fire, although the demands made upon it were enormous and were augmented by the waste from hundreds of broken service pipes in the destroyed buildings. Yet, though the fire started in a building of more than ordinarily good construction, located so as to be accessible from three sides, the fire was communicated to other buildings by an explosion due to unknown causes, almost immediately passed beyond control of the fire department and thereafter spread from block to block with a rapidity almost incredible.

The tremendous extent of this fire and the enormous destruction of property were primarily due to the following causes:

Many of the streets were narrow and many of the buildings were built with inflammable roofs and cornices. For the sake of convenience, openings had been made, in hundreds of cases, in the walls between buildings; and finally and chiefly, the great majority of the buildings in the burned district had numerous wholly unprotected door and window openings on to the narrow streets and alleys, or into the courts which were

used for purposes of light and ventilation. These features of construction are commonly known to be dangerous, but ordinarily the fire department is relied upon to offset them. When, however, a fire gets beyond the control of the department, all of these dangerous factors come at once into play and are largely, if not altogether, responsible for the great loss which ensues. Inflammable material separated from a blazing structure by glass windows only, will take fire almost as quickly as though it were piled in the street. Wooden cornices will ignite when exposed to a hot fire at a considerable distance from it, say, one hundred feet or more.

The probabilities are that, had the buildings in the vicinity of the origin of the Baltimore conflagration been provided with fireproof roofs and cornices, and had all exterior wall openings been protected by approved fire shutters or doors, there would have been no conflagration. In other words, conflagrations are preventable and unnecessary. Just at present, when the recollections of Baltimore are still fresh, and are kept so by the subsequent disastrous fires at Rochester and Toronto, the cities of the country are more or less active in their efforts to create safe conditions. Similarly, after the Iroquois Theater disaster in Chicago much was done in the theaters throughout the country to make theaters less dangerous. However, many if not most theaters are still capable of duplicating the Chicago horror, and most of our cities are still in a condition which invites conflagration. Nor, it is to be feared, can the cities be relied upon to take any action which will largely eliminate this danger. Rather must we expect that the fear of conflagration will cause insurance companies to impose such heavy penalties in the way of increased rate charges, where there are dangerous features of construction, lack of adequate protection, and other factors which invite sweeping fires, as to compel the adoption of proper safeguards.

The best obtainable reports indicate that since 1820 property amounting in value to about five hundred million of dollars has been destroyed in conflagrations in the United States. ✓

In a former lecture the relative activity of the principal hazards was touched upon, and it may be interesting now to note the extent to which, relatively, some of the different classes of risks suffer from fire. The available data upon which we must rely for information as to the distribution of losses, and as to the potency of the different hazards as well, is by no means exact, and due allowance must be made for the errors arising from imperfect reports and the absence of reports in many cases. Yet, for our purposes of comparison, we may accept the obtainable figures as relatively correct and as approximately indicating actual results.

If we divide the buildings of any town or city into three general classes, namely: (a) dwellings and barns; (b) mercantile buildings, and (c) factories, including in the latter all risks where power is used to any considerable extent, we shall find that the dwellings greatly exceed in number the buildings of the other two classes, and that again the stores far exceed the factories. It is to be expected, therefore, that the greatest number of fires will occur in dwellings, especially since defective flues and dangerous heating apparatus—the most frequently operating causes for fires—are more often to be found in dwellings than elsewhere. The facts justify this expectation. In a natural and logical order, the fires in mercantile risks again largely exceed in number those which occur in factories. The same order does not prevail, however, when the value of the property destroyed in the several classes is tabulated. It is obviously true that, as a rule, far greater values are exposed to fire in a mercantile or manufacturing risk than in a dwelling. Moreover, such risks are more inflammable and are apt to lack the constant supervision which

prevails in a dwelling-house where fires are usually quickly discovered and in a majority of cases as quickly extinguished.

The experience of eighteen years throughout the United States gives approximately the following results:

Class.	Number of Fires.	Value Destroyed.
Dwellings and barns.....	550,000	\$470,000,000
Mercantile risks	200,000	700,000,000.
Manufacturing risks	80,000	550,000,000

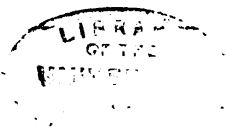
from which it will be seen that the destruction of value in the average loss of the dwelling class is about one-fourth that which is caused by the average mercantile loss; and this again is about one-half that caused by the average fire in a manufacturing risk. Of the total number of fires nearly 50 per cent. occur in dwellings; something over 25 per cent. in mercantile risks; and about 8 per cent. in manufacturing risks.

The progress of the fire wave throughout the year is not without interesting features and can be best shown by a diagram or plat indicating the record of a long series of years. Such a diagram, showing both the property loss and the number of fires by months, is here presented. It is based upon the record of twenty-eight years prior to 1903, and since no great conflagration occurred during that period, it may be fairly held to exhibit the normal relative experience of the different months.

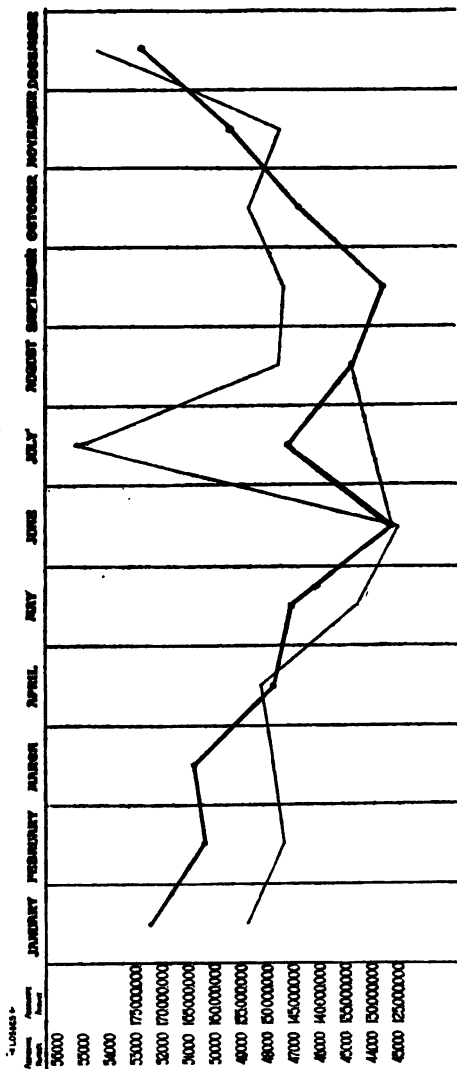
The course of the heavy line shows the total property destruction by months for twenty-eight years.

The light line shows the aggregate number of fires for twenty-eight years by months.

This plat indicates that the shape of the fire curve throughout the year is governed in large measure by the seasons. The maximum destruction occurs during the cold winter



Losses by Months



months and the minimum during the summer months, when there is less use of fire for heating purposes, and when, therefore, the hazards which of all hazards are most fruitful of destruction, namely—defective flues and heating apparatus—have their smallest opportunity.

As might be expected, the curve reaches its lowest point in the early summer, when the millions of shingle roofs, the forests, the prairies, the lumber yards, and other inflammable substances are still somewhat moist from the spring rains and are less likely to ignite from sparks and other causes than later in the summer, when they have been subjected to the dry parching winds of July and August and to the drouth which so often prevails in midsummer in many sections of the country and acts as a predisposing cause for the ready inception and rapid spread of fire.

The curve as presented shows one noticeable irregularity. This occurs in the month of July. A fainter line indicates the course which the curve might reasonably have been expected to follow. Instead of this course, however, an abrupt rise is seen. The average loss for July has been \$9,831,000, whereas the normal curve would indicate an average loss of about \$8,725,000. This variation can, with little chance of error, be attributed to the celebration of the Fourth of July, which would seem to be responsible, therefore, for the loss by fire each year of property whose value exceeds one million of dollars. The average number of fires in July also, no doubt for the same reason, is abnormal, exceeding the average of June and August by about four hundred and fifty. In fact, the record for ten years shows a larger average number of fires in July than in any other month of the year.

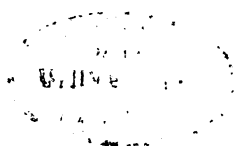
The slight depression in the curve shown during September may well be due to the fact that in September the fall rains begin, thus lessening the susceptibility of buildings to fire,

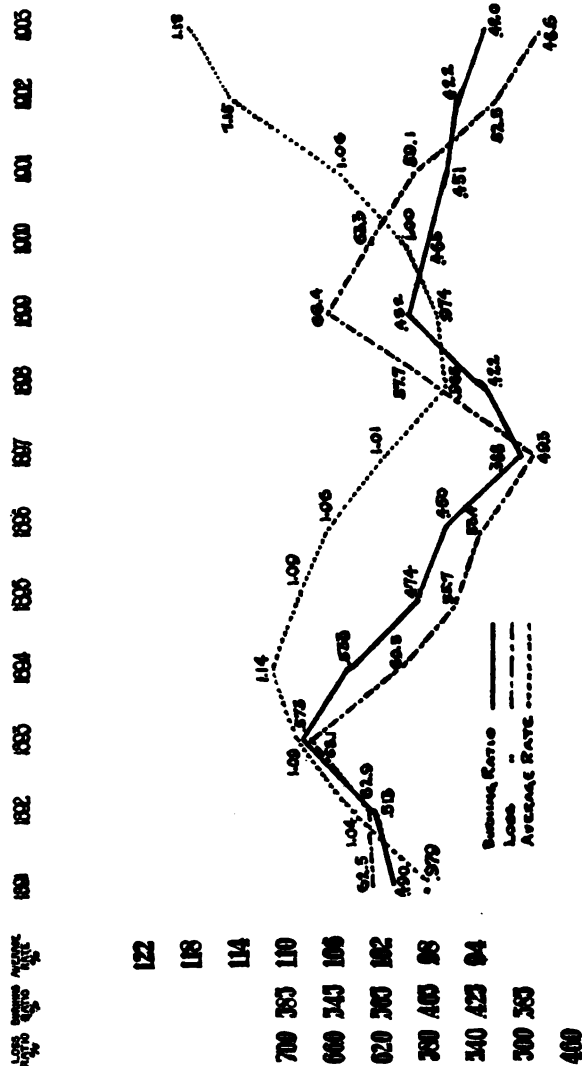
while at the same time, in most parts of the country, the use of heating apparatus—the chief apparent cause for the augmented losses of the winter months—has not yet begun.

The geographical distribution of loss seems to closely approximate that of the population and material wealth. The largest number of fires occur and the greatest values are destroyed in the four most populous and wealthy states; namely—New York, Pennsylvania, Illinois, and Ohio, in which states the total property loss for twenty-eight years is as follows:

New York	\$450,000,000
Pennsylvania	270,000,000
Illinois	196,000,000
Ohio	181,000,000

It does not follow from this, however, that the fire cost—that is, the percentage of loss to insured property as compared with the amount of insurance carried thereon—varies in the same way. On the contrary, New York State has the lowest burning ratio of any of the United States, and Pennsylvania, Illinois, and Ohio are all much below the average in this respect. In other words, while the actual loss in these states is greater than elsewhere, the relative loss as compared with the population and wealth is less than is usually found in other states, from which we may properly conclude, perhaps, that better fire protection, better care, and better methods of building are to be found in those sections where the population and wealth are most centered. This conclusion is strengthened by the fact that the highest burning ratios are to be found in Arizona, Florida, Indian Territory, and North Dakota, communities where the population is sparse and the material wealth, comparatively speaking, small. The burning ratio of Arizona is over five times that of New York, and





"The figures exhibiting the burning ratio represent decimal fractional parts of 1/4 of the total amount at risk—not the fractional parts of the entire amount at risk (see table, page 152)."

accordingly the average rate paid for insurance in Arizona is over four times that paid in New York, which state enjoys a lower rate of insurance taxation than any other state in the Union, and properly so in view of its low burning ratio.

These brief and condensed statements naturally lead up to the consideration of the general subject of the relation existing between the fire cost, the loss ratio, and the rate of insurance taxation. The accompanying plat will be helpful in this matter. On this plat the unbroken line indicates the history of the burning ratio—the true measure of cost—from 1891 to 1903, inclusive. The dotted line represents the varying percentage charges or rates, i. e., the rate of taxation levied by the insurance companies; while the broken line shows the loss ratio incurred by the companies under these conditions.

To insure clear understanding, please keep in mind that by burning ratio, or fire cost, is meant that percentage of the amount of liability assumed by companies which is made payable by fire; and that by loss ratio is meant that percentage of the premium income which is required to pay incurred losses. Suppose, for example, an insurance company writes insurance policies amounting to \$30,000,000 and receives an income in premiums therefor of \$3,000,000. Suppose, also, that it suffers losses under these policies amounting to \$2,000,000. Then it will have lost $\frac{2}{3}$ of the total amount of its liability and $\frac{2}{3}$ of its premium income. $\frac{2}{3}$, therefore, or .666, will express its burning ratio or fire cost, and $\frac{2}{3}$ or .66, will express its loss ratio. It is manifest that the loss ratio is governed by the combined influence of the burning ratio and the rate of taxation. In the last analysis, however, the rate of taxation also is governed by the burning ratio.

A low loss ratio means a large percentage of profit. At a time when a low ratio prevails, competition for business becomes very keen and many companies begin to offer more

favorable terms. In order to retain their customers, other companies are forced to also reduce prices and thus the average rate is gradually cut down. So utterly impossible is it to long maintain prices at a level which will afford large profits, that conservative and far-seeing underwriters are quite as often opposed to attempted advances in rates as favorable to them.

Referring now to the chart: In 1891 the burning ratio was above the average, but owing to preceding favorable years—especially 1890—the average rate had fallen to a very low point. Consequently, the loss ratio was fairly high. Moreover, the burning ratio increased in 1892, and in 1893 reached the highest point recorded for many years, or perhaps in any year during which no great conflagration occurred. Accordingly, during 1892 and 1893 rates were advanced repeatedly, the average rate increasing about 10 per cent.

In view of the enormous amount of risks carried, this increase in rate meant a very large increase in the insurance tax. In fact, the premiums collected in 1893 exceeded those of 1891 by over seventeen millions of dollars, about double the amount of increase which would have ensued from the increased amount of liability assumed. When the books of companies were balanced, as required by law, at the end of 1893, that year was found to have been the most disastrous year in the history of the business, barring conflagration years. Companies therefore entered upon 1894 with the belief that rates were still too low, and accordingly rates were made even higher, by five points, in 1894. During that year, however, and for the three succeeding years, the fire cost decreased each year and reached in 1897 the lowest point recorded in the entire period of thirteen years. At the same time and in consequence of this decrease the average rate receded. As may be seen, the course of the burning ratio and of the

average rate is shown on the chart by lines almost parallel from 1893 to 1897. However, changes in the average rate, being caused by the burning ratio, follow the latter in point of time and are usually about one year later than the experience which determines them. (Note the dip in the burning ratio in 1893 and the dip in the average rate in 1894.) Accordingly, the years from 1894 to 1897 were highly profitable. In 1898, however, the burning ratio began to ascend once more, while rates, still under the influence of the extremely favorable record of 1897, continued to decline. Nevertheless, the year 1898 as a whole was a good one, especially during the later months, and underwriters entered 1899 without any strong incentive to advance prices. In fact, the average rate advanced but little in that year, though the burning ratio was excessive.

The result of this combination of a low and stationary average rate with a rapidly increasing burning ratio was that the loss ratio jumped to a point that meant a serious loss on the year's business and rates began to advance once more, while the burning ratio receded slightly—not enough, however, to create a profit for 1900 or to check the accelerating advance in rates. This advance continued throughout 1901, during which year there was a further very slight recession in the burning ratio, so that companies ended that year with books nearly balanced as to income and outgo, though, when the added reserves necessary to care for an increasing business were taken into account, the year was a losing one. Nevertheless, there can be little doubt that under normal conditions the year 1902, barring an increase in the burning ratio, which did not occur, would have yielded a profit, because of the natural tendency of rates to continue to advance in the absence of that condition of things which, and which only, seems to bring about a reduction, namely—abnormal profits. But the year

1902 was full of abnormal experiences. Hardly had the results of the work of the year 1901 been ascertained when, in February, two conflagrations followed one another in rapid succession. These disasters occurred at Waterbury, Connecticut, and Paterson, New Jersey, and together destroyed property valued at about seven million of dollars. These fires, coming after a period of three years during which there had been no profit in the business, caused consternation in fire insurance circles. The officers of most companies believed that another unprofitable year was in store and that the loss-paying ability of many of the companies would be seriously jeopardized unless some radical action was taken. So widespread was this belief and so urgent appeared the necessity for immediate action, that almost without exception companies—some by formal agreement, others by individual action—took steps in April, which resulted in advancing the average annual rate for 1902 by twelve points and carried it to a figure not before reached in the recorded history of the business.

This was accomplished by arbitrarily advancing the existing prices for many kinds of property—the most hazardous—25 per cent. It was an abnormal and radical method of procedure, yet such was the temper and such the apprehensions of underwriters that few could be found who seriously opposed the step or doubted its wisdom.

No sooner had this action been taken, however, than the fire record began suddenly to improve and continued to be highly favorable throughout the balance of the year, so that as events proved and despite its untoward commencement, the burning ratio for the whole year 1902 showed a perceptible decrease as compared with 1901, and was over $4\frac{1}{2}$ points below that of 1899. This fact, coupled with the radical advance in prices, reduced the loss ratio to $52\frac{1}{2}$ and caused 1902 to rank as one of the best years in the history of the business.

The arbitrary advance above mentioned continued until 1903, with the result that the average rate advanced in that year somewhat above the high mark of 1902, while the burning ratio again receded. It resulted that 1903 closed with an average loss ratio of 48.6 per cent., the lowest ever recorded, and which caused an abnormal profit, so large as to make reductions in the average rate an absolute necessity. In fact, the closing months of 1903 saw this reduction well under way and it was in full progress when the great Baltimore conflagration came to stay it.

As to the wisdom or necessity for the great advance in rates in 1902 there is much room for argument. Some of those who favored it then afterwards came to consider it a mistake, and the facts expressed in our chart would not seem to demonstrate a valid reason for it. On the other hand, it must, in fairness, be said that the high rates which it produced made possible the accumulation, in the treasuries of companies, of funds which in many cases materially assisted them to survive the shock of the conflagrations in Baltimore, Rochester, and Toronto during the past four months, and the same high rates are even now effective in lessening to some extent the demands of those who believe that a further radical advance in prices has been made necessary by these conflagrations.

We have already discussed most of the printed conditions of the Standard Policy in one of the earlier lectures. Those paragraphs which had particular reference to loss settlements, however, were then passed over and will be briefly considered now.

Referring to the Standard Policy, the first six lines state in a general and preliminary way—

First (lines 1-2), the extent of the liability assumed by the company. This was discussed in the earlier lecture.

Second (lines 2-3), the manner in which the loss or damage shall be ascertained.

Third (lines 3-4), the date when proved claims shall become due. And,

Fourth (lines 4-5-6), the options to which the company is entitled; (a) to pay to the assured the duly ascertained value of the property damaged, thereby acquiring ownership of it; or, (b) to repair, rebuild, or replace the property destroyed or damaged with other of like kind and quality after the loss or damage has been duly proved. But the assured is not permitted to abandon his property to the company except at their option.

The second and third provisions just mentioned are more fully elaborated in later paragraphs and will be touched upon when those paragraphs are discussed.

The fourth provision is intended for the protection of companies. It enables them sometimes to defeat attempts to collect exorbitant claims for damages or to replace at actual cost a building or other property where an excessive amount is claimed.

The first option is often useful in cases where an excessive damage is claimed on articles whose value has been fixed during the settlement. For instance: if the assured and the company have agreed that the original or sound value of a damaged stock was \$10,000, but cannot agree as to the amount of damage done by fire, water or smoke, it is of course perfectly fair for the company to pay to the assured the agreed value, namely \$10,000, and then to dispose of the stock as best it can. Very often by this means controversy is avoided and the claimant satisfied beyond cavil, while the company escapes with the loss of a much smaller sum than the claimant would have been satisfied to accept without dispute. Where this course is followed the damaged articles are usually cleaned, repaired, and put into the best possible condition and then sold. This process is called wrecking and

has grown to be a business by itself. A number of insurance companies have organized a company to do such work and there are also private concerns who conduct renovating establishments, where damaged goods and wares of every description may be cleansed, laundered, polished, repaired, dyed, or put through any other process that will make them salable, and the salvages thus made are frequently surprisingly large.

The second option—that which gives the company the privilege of replacing—is availed of by companies in extreme cases only. Insurance companies are not traders or contractors. They have no special machinery or opportunities for advantageous buying; in fact, are likely to be unable to purchase at as favorable terms as the assured.

Nor if a building is to be repaired or rebuilt can the work be economically supervised and watched by an insurance company, especially if, as is likely to be the case, the location is at a distance from the head office of the company.

Moreover, the requirement that the company shall furnish articles of like kind and quality involves certain risks, for it may be necessary to prove that this condition has been satisfied.

A noteworthy case of this kind occurred not many years since in Tennessee, where the owner of a hotel which had been destroyed succeeded in establishing what seemed to the companies interested an excessively high valuation,—so high, in fact, that it was thought a new building like the old one could be erected for much less than the amount claimed. Accordingly, the companies elected to rebuild instead of paying the loss, and having called upon the assured for plans and specifications, proceeded to make contracts for the restoration of the building exactly as it was before the fire. It was practically impossible for the companies to watch every detail of the construction, but an easy matter for the assured, who lived

where the building was located. When the building was finished the companies tendered it to the assured in lieu of payment, but he was able to prove—or at least did prove to the satisfaction of a jury—that the building was not of exactly the same kind and quality as the old one which had been destroyed. Therefore he claimed the full cash payment and the court decided that the companies were liable. As a result, the assured received the full amount of his claim, with interest, and since the new building was on his land, he also acquired that. This was a very costly experience for the companies and will suffice to explain why the option to replace is seldom used.

✓
Passing now to the more detailed conditions of the policy, which refers to loss settlements, we begin at line No. 67.

The paragraph embraced in lines Nos. 67-80 inclusive, states very clearly the duties of the assured if fire occurs and provides first,—that he shall give the company due notice of its occurrence.

Second,—that he shall protect the property saved, whether damaged or undamaged,—at the same time making an inventory of the same, with complete statement of quantities, values, and amount of claimed damages. And,

Third,—that he shall, within sixty days, render a complete statement, under oath, giving in detail a full account of the fire and a description of the property involved, and of the facts concerning its ownership, in accordance with the list to be found in the paragraph under discussion.

The next five lines, Nos. 81-85 inclusive, give to the company the opportunity to inspect all that remains of the property, to cross-examine the assured as to claims and statements made and to verify same by an examination of the books and records of the assured.

It will be seen that these provisions and requirements (embraced in lines Nos. 67-85 just mentioned) contemplate

the making of a complete proof or statement by the claimant, which the company may thereupon verify, test, and pass upon, and, if the proofs set forth a claim which is satisfactory and correct under the terms and scope of the contract, it is to be presumed the company will, at the proper time, pay it.

In common practice, loss claims are settled in a somewhat different fashion. As soon as practicable after a notice of loss has been received and without waiting for detailed statements, a representative of the insurance company—called an adjuster—goes to the scene of the fire for the purpose of investigating and settling, or adjusting, the claim.

The adjuster's work is difficult and often technical. Since he is called upon to settle claims arising from loss or damage to buildings, an expert adjuster must be competent to supervise and criticise plans and estimates. In order to adjust claims for mercantile losses he must be informed, or be able to acquire information, as to the value of commodities of all kinds, and should be well versed in the methods and customs of the various branches of commerce and manufacture.

Furthermore, he must be a good accountant, so that he may be able to test the accuracy of the amounts of goods on hand, profits, etc., etc.

Finally, and perhaps most important, he should possess the ability and personal qualifications necessary to carry on with as little friction as may be, negotiations concerning all these matters with claimants to the end that claims may be amicably and justly settled without dispute or litigation, which the better class of companies dread and will concede much to avoid. Since claimants usually have an exaggerated idea as to the amount of loss they have suffered, and are ignorant for the most part of the nature of the contract under which their claim has arisen, this is no easy task.

In addition to these requirements, a good adjuster often has need of that alertness of perception and ingenuity which will

enable him to detect and defeat the well laid plans of those too frequent claimants who endeavor, by one means and another, to fraudulently collect claims to which they are not entitled or which are dishonestly excessive.

✓ The first duty of the adjuster, after requiring the assured to take proper care of any insured property not totally destroyed, is to determine whether the company is actually liable for the loss or damage, or not. That is, he must find, through investigations of various sorts, whether the contract has been made void by any of the circumstances, acts, or conditions named in lines Nos. 7-30 inclusive. This will include an attempt to discover the cause which originated the fire. In those few cases where there is reason to suspect that the policy has been rendered void by fraud or some other cause, the adjuster must exercise a wise discretion as to his subsequent actions. If there be clear evidence of deliberate fraud, he will secure proofs of it and take no further action. If, later, the assured attempts to present proofs or to collect his claim, the company will deny liability and contest the claim, if need be, in court; or, the claimant, knowing his case to be well-nigh hopeless, will consent to withdraw his claim for some nominal sum. Where there are strong indications of fraud, but not sufficient evidence to enable a flat denial of liability to be made, a temporizing policy is often pursued. The claim is investigated, the assured cross-examined and questioned, his statements are verified or disproved by careful investigation, and if, during the protracted negotiations, he is discovered to be making false statements, he will very likely put himself in a position where he must accept a partial payment or compromise settlement, or he will perhaps defeat himself altogether. As stated above, however, the vast majority of claims are found to be honest and the sole duty of the adjuster in such cases is to ascertain the extent to which the company is liable.

Trifling losses demand little time or attention. The cost of petty repairs or the value of an insignificant amount of merchandise or other property, which has been destroyed, can almost invariably be quickly agreed upon. The small amount involved will not warrant either party in delaying a settlement.

In the case of larger losses, the first step towards determining the extent to which the company is liable is to endeavor to agree with the assured as to the fair cash value of the insured property immediately preceding the fire. In determining this value—usually called the sound value—the question of depreciation,—referred to at some length in a previous lecture—must be gone into.

To determine the fair cash value of a building which has been destroyed or very badly damaged, it is usually necessary to have plans or descriptions furnished by the owner. By means of these it is not difficult to determine, by estimates obtained from builders or otherwise, what it would cost to replace the building. This amount, when subjected to a proper depreciation, represents, in ordinary cases, the value in question.

There are, however, in every community, buildings which, on account of unfortunate location, bad design, or some other reason, have practically no real cash value. Insurance companies do not knowingly insure such buildings; but where, by reason of the carelessness of examiners or inspectors, or through the ignorance, or worse, of a local agent, such buildings are insured, they are very apt to burn, and the loss settlements necessary in such cases almost invariably lead to controversy and must be settled—not by any well-defined rule but by some compromise, probably unsatisfactory to both parties. ✓

To fix the value of personal property, as, for instance, a stock of merchandise, is a more difficult matter. The basis

or starting point in the process of adjusting every loss on merchandise where a large portion of the value has been destroyed should be an inventory, which should furnish a clear and accurate statement of the quantities and values, with proper allowance for depreciation, of the insured property on hand at some date within a year previous to the fire. Since most merchants and manufacturers take annual inventories, this basis can usually be had, though often a careful verification of it is necessary.

To find the value at the time of the fire there is added to the amount shown by the inventory the subsequent purchases as shown by the books and vouchers of the assured, and from the sum thus found are deducted the sales, less profits on goods sold.

The question of profit is often difficult to determine, as many factors affect it and few merchants and manufacturers keep their records in such a way as to accurately measure this item.

✓ The rate of profit plays a very important part in the settlement of losses on merchandise, for the larger the profit the greater the loss, as will appear from the above statement.

Where a policy covers staples in large quantities (usually in warehouses or elevators), such as cotton, tobacco, grain, flour, etc., instead of determining value by means of an inventory, it is determined by quantities and the market price, which fluctuates from day to day and which may be very different at the time of the fire from the original cost to the owner.

When the value has been fixed, an attempt is made to agree upon the amount of loss or damage. If the property has been totally destroyed, this is, of course, not necessary. Where the property insured is a building and is but partially destroyed, the amount of damage is ascertained by determining the cost

of the repairs necessary to fully restore the building to its former condition. Where merchandise or other personal property is merely damaged or partially destroyed, various methods of ascertaining the amount of damage are used. If no articles are totally obliterated, the damaged are separated from the undamaged and the amount of loss on each damaged article or package of goods is agreed upon. Then the sum of these agreed damages makes up the total loss which has been sustained by the assured. Where any considerable portion of a stock of merchandise has been completely obliterated, however, the amount of loss sustained is determined by subtracting from the already ascertained sound value immediately preceding the fire, the value of that portion of the stock which is saved, making due allowance for any damages incurred.

It sometimes happens that there is no inventory, either because none has been taken or because it has been destroyed in the fire. Such cases often test the ingenuity of the adjuster. He must secure from the assured some fairly accurate estimate of the value of the merchandise on hand before the fire. If any books of sales or of cash receipts are at hand, these are searched and the volume of his business and sales thus established. He is also usually required to secure duplicate invoices and bills from the manufacturers and jobbers from whom his stock was purchased. Sometimes his daily deposits and withdrawals from his banker are tabulated, and, finally, his own memory is searched, as well as those of his employees. By combining all these methods, some approximation of the value can be made, even if the entire stock on hand has been destroyed, but such cases are very unsatisfactory—so much so that most companies will not insure merchants who do not keep regular books of account and take annual inventories.

Having now determined the sound value and the actual loss or damage, the claim is adjusted by applying the conditions and amount of the policy to these ascertained items.

The assured may not recover more than the sound value. He cannot collect more than his actual loss, nor more than its proper proportion under any one policy. Moreover, if the co-insurance clause forms a part of the contract and he has failed to carry enough insurance to comply with it, that fact may affect the amount of his claim against the company. (See second lecture.) Nevertheless, when once the value and the actual loss are ascertained, the amount of the claim against the company can in almost every case be determined by a very simple mathematical calculation. This being done, the adjuster in ordinary cases helps the assured to prepare his proofs and forwards them to the company for approval and payment, or he may pay the loss on the spot.

It was stated above that when once the value and amount of loss were ascertained, the proper amount of claim could be readily ascertained in almost every case. In some cases where more than one policy is affected and the policies differ in scope or conditions, it is very difficult to determine how great a claim should be made under each policy. For instance:

Suppose three policies to be in existence at the time of fire and that all have been issued to the same merchant, who carries a general miscellaneous stock of merchandise, including dry goods, groceries, hardware, boots and shoes, etc., etc. Suppose further that these three policies cover as follows:

The first—on his stock of general merchandise (which would include everything kept for sale); the second—on his stock of groceries and provisions only; while the third covers his stock of groceries and dry goods. In such cases, of which this is a very simple example, even if the values and the amount of loss are quickly determined, it requires some skill and often protracted negotiation to determine just how

much each policy shall pay, unless, indeed, the destruction of the property is so great as to involve beyond a doubt a total loss to all policies. This situation would be considerably complicated if one of the policies contained a co-insurance clause and the other did not. In any event, the company with the broadest or most inclusive form would be at a serious disadvantage as compared with the other two. Such policies are called non-concurrent and are not knowingly written or permitted by insurance companies; but they are sometimes found to exist where several different agents have been interested in a risk and have not been careful to examine all the policies in force upon it, for it is a fixed principle that policies intended to cover the same property shall be identical in language.

Thus far we have assumed that the adjuster and the assured have agreed without much difficulty, though it must be admitted that the problems involved in fixing values, damages, and profits, and in defining the application or scope of the policy, afford many opportunities for honest differences of opinion. It argues well, therefore, for the ability, tact, and fairness of adjusters as a class, that the number of claims which are not settled by agreement with the claimant is, comparatively speaking, very small.

When, however, an agreement as to value and amount of loss *cannot* be reached, lines Nos. 86-91 of the policy provide that these questions shall be determined by arbitration. The case is then put into the hands of two arbitrators,—one chosen by the company and the other by the claimant, and the arbitrators themselves choose an umpire. A decision by any two of the three so selected is final. This is, theoretically and practically, an eminently fair way of settling such disputes if truly disinterested and competent arbitrators are selected. It sometimes happens that improper selections are

made and the case is then likely to lead to much bitterness and feeling and, not infrequently, to litigation.

It is to be noted that the arbitrators may fix the value and ascertain the amount of loss. They are not permitted, however, to make any decision as to the liability of the company or as to the extent to which the policy shall apply. Where the assured and the adjuster cannot agree upon those points, a recourse to litigation is the only method of reaching a settlement. Either the company or the claimant may demand an arbitration at any time. Accordingly, when the case bids fair to be complicated or involves unusual problems, as, for instance, the determination of the value of or damage to large quantities of expensive machinery or the ascertainment of the damage of partially wrecked fire-proof office buildings, as recently in Baltimore, it is usual, at the outset, to adopt the method of arbitration. Usually in such cases neither side is competent to fix the loss and expert builders or machinists are employed as arbitrators.

Lines Nos. 92-93 provide that the attempt to fix the amount of loss by appraisal and the other steps taken by the company to investigate the loss shall not be held to prevent it from denying liability later if circumstances warrant such action, or in any way bar it from the rights which the policy conditions confer.

Lines Nos. 94-95 make the loss payable sixty days after it has been adjusted or the arbitration decided, and proper proofs have been filed with the company. This interval gives the company time to verify the proofs and to make any further investigation necessary to confirm the honesty of the claim. It also, in the case of conflagrations, allows time for the accumulation of funds with which to make payments. Companies usually elect to pay small losses as soon as they are settled; and usually, too, they are glad to

promptly pay large ones if the claimant will consent to the regular rate of discount for prepayment.

In the second lecture it was stated that probably not over one-half of one per cent. of the total number of claims result in litigation. This is an extremely remarkable fact when the opportunities for conflict which present themselves in loss settlements are considered. The truth is, however, that adjustments are not often difficult to accomplish when there exists an honest desire on both sides to fairly and equitably measure the extent of the actual loss or damage according to the conditions of the policy. This is the usual condition, though sometimes men ordinarily honest cannot resist the temptation offered by the opportunity to make a profit out of a fire; and sometimes, too, though by no means often, it must be admitted, adjusters, impelled by a desire to make a reputation for successful settlements or because they desire to cut down the loss payments of their company as much as possible, are loth to deal out to the assured the full measure of compensation to which he is entitled. Companies of good standing do not encourage or knowingly permit injustice to claimants. The good-will of customers is a valuable asset and no company can afford to acquire a reputation for unfair settlements.

On the other hand, all losses should be settled so that the assured may receive as near as may be the amount to which he is entitled and no more. Lax methods and a reputation for indiscriminate liberality are likely to make a company a target for numerous fraudulent claims and bring to it a class of patrons whose deliberate purpose when securing insurance is fraud. Furthermore, such methods violate that cardinal principle of insurance—"No profit to the assured from a fire," and by so doing encourage carelessness, the increase of the fire waste, and the growth of incendiarism.

Table given below shows the Burning Ratios, Loss Ratios, and Average Rates of the different States of the Union for a period of twenty-three years, ending December 31, 1902:

STATE.	Burning Ratio.	Loss Ratio.	Avg. Rate.
Alabama .....	.0081	52.9	.0153
Arizona .....	.0194	79.9	.0243
Arkansas .....	.0119	61.6	.0193
California .....	.0068	43.8	.0155
Colorado .....	.0072	44.2	.0162
Connecticut .....	.0046	48.7	.0094
Delaware .....	.0048	59.7	.0080
District of Columbia ....	.0023	39.6	.0059
Florida .....	.0176	90.1	.0195
Georgia .....	.0074	57.6	.0128
Idaho .....	.0141	57.9	.0244
Illinois .....	.0057	49.6	.0115
Indiana .....	.0086	56.9	.0120
Indian Territory .....	.0166	75.8	.0220
Iowa .....	.0068	45.2	.0151
Kansas .....	.0067	50.6	.0133
Kentucky .....	.0081	61.6	.0131
Louisiana .....	.0059	51.7	.0113
Maine .....	.0083	60.3	.0137
Maryland .....	.0042	56.2	.0076
Massachusetts .....	.0057	56.5	.0100
Michigan .....	.0076	54.9	.0139
Minnesota .....	.0081	57.4	.0141
Mississippi .....	.0098	52.1	.0188
Missouri .....	.0077	64.3	.0119
Montana .....	.0083	34.8	.0240
Nebraska .....	.0066	43.5	.0151
Nevada .....	.0092	37.3	.0247
New Hampshire .....	.0065	52.0	.0124
New Jersey .....	.0045	56.3	.0081
New Mexico .....	.0106	54.3	.0196
New York .....	.0036	58.7	.0062
North Carolina .....	.0081	54.9	.0148
North Dakota .....	.0154	77.4	.0200

STATE.	Burning Ratio.	Loss Ratio.	Avg. Rate.
Ohio .....	.0066	59.8	.0110
Oklahoma .....	.0054	30.8	.0174
Oregon .....	.0087	43.2	.0201
Pennsylvania .....	.0061	57.2	.0107
Rhode Island .....	.0048	50.5	.0095
South Carolina .....	.0072	54.3	.0132
South Dakota .....	.0090	48.5	.0185
Tennessee .....	.0099	66.4	.0150
Texas .....	.0102	62.4	.0163
Utah .....	.0075	43.1	.0173
Vermont .....	.0091	65.9	.0138
Virginia .....	.0081	59.8	.0135
Washington .....	.0133	60.5	.0220
West Virginia .....	.0072	56.5	.0126
Wisconsin .....	.0079	55.6	.0142
Wyoming .....	.0068	35.8	.0189

Below is given a simple example of statement such as is ordinarily made up, to show the method by which a loss is settled, and should be studied in connection with the remarks upon Adjustments in the last lecture.

STATEMENT OF LOSS.

Value.

Last inventory	\$11,000
Deduct agreed depreciation	1,000
Net value date of inventory	\$10,000
Add purchases since inventory, including freight.....	4,000
	\$14,000
Deduct sales since inventory	\$5,000
Less agreed profits	1,000 4,000
Sound value	\$10,000

Loss.

Property saved undamaged	\$3,000	
Add property saved damaged	\$3,000	
Less agreed damage to same as per itemized schedule	1,000	2,000

Total salvage	\$5,000	
Total loss to assured	5,000	

\$10,000

Insurance carried \$6,000, with 80% co-insurance clause,
which, with a sound value of \$10,000, requires
\$8,000 insurance to be carried.

Therefore each \$1,000 of insurance will have to pay
 $\frac{1}{8}$ of \$5,000 (the total loss), or \$625.

\$6,000 insurance pays	\$3,750	
Assured contributes \$2,000 insurance, which pays	1,250	

Total	\$5,000	
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FIRE INSURANCE ENGINEERING

METHODS OF BUILDING CONSTRUCTION FOR THE PREVENTION OF FIRE LOSSES

BY H. C. HENLEY

Much of the enormous fire loss in these United States can be traced directly to faulty construction of buildings; open elevator shafts, stairways, light shafts, well holes and other communicating openings through floors, creating natural flues, through which fire, once started, travels with lightning rapidity throughout the building. The arrangement of wooden sheathing on walls, metal and wood ceilings, the construction of attics, creating concealed spaces wherein fire, obtaining headway, is inaccessible to streams of water. Mercantile buildings with stone or iron fronts, backed with wood lath and plaster, leaving continuous open space through full height of wall from cellar to attic, defective construction of flues, defective wood framing around flues—all tend to increase the fire loss.

Within the past few years, insurance inspection bureaus have given the matter of the construction of buildings, towards making them more fire-retardent, much attention, and in attempting the correction of the above defects, the slow-burning building was designed, and most of the buildings which are erected at the present time, especially those intended to contain large and valuable stocks or to be used as large manufacturing plants, are either of slow-burning construction or of the so-called fireproof type.

I have been requested to describe the Standard Slow-Burning Building. The Standard Slow-Burning Building differs from the building of joist construction in the following particulars:

The elevators, stairs, belts, etc., are enclosed in brick shafts—walls of shaft extending three feet above roof and shaft communicating with each floor through openings provided with standard automatic fire doors. Floors are solid, without openings, constructed of heavy tongue and grooved plank with top floor of matched boards, with two thicknesses of asbestos paper between the two. The floors are laid directly upon the beams and girders and the bottom of the beams and girders are left open, preventing any concealed spaces in which dirt can accumulate. In this construction, there is less surface exposed to flame, and, the beams being heavier than joist in joist construction, the floor is kept intact a longer period of time, and there is a chance to hold fires that occur upon the floor in which they originate.

Walls should preferably be built of hard-burned brick laid in cement mortar. Stone disintegrates quickly and granite is particularly bad under heat and will not stand fire and water. Steel or iron framework of walls, unless protected by brick or terra cotta, loses its strength rapidly under heat.

Ornamental fronts and fronts having a large amount of glass are subject to severe loss from exposing fires.

Good brick clay does not contain more than 6 per cent. of fluxing impurities and when hard burned affords the best material for the construction of walls. The small difference in the cost between brick made of good clay, hard burned, and brick made of inferior material is sometimes the cause of the cheaper brick being used.

In a seven-story fireproof hotel structure, being erected at the present time, I noticed the quality of brick which was being used in the construction of the walls, and an analysis of the brick showed:

Loss by ignition	0.20 per cent.
Silica	58.10 "
Alumina	14.41 "
Oxide of iron	5.82 "
Lime, CaO	10.16 "
Magnesia, MgO	5.88 "
Alkalies	5.43 "

 100.00

Total fluxing impurities 27.29 per cent.

The brick had weak bond, crushing at 2,610 lbs. per sq. in. It was poorly burned, as it was evident from its composition that it would not stand much over a low kiln heat without melting and its use as building material would be dangerous, since it would be destroyed at a temperature far below that common in burning buildings.

The strength of the wall depends upon the mortar used and the best mortar is composed of Portland cement and clean, sharp sand, mixed while dry in the proportion of not less than one of cement to three of sand, thoroughly mixed to a uniform color and sufficient water added to make a smooth mortar. The mortar should not be allowed to set or become hard before used. Mortar made and used as stated above will bond well and is very adhesive. Poor mortar is as bad as poor bricks and a wall made with poor mortar will be merely a pile of bricks with no bond after a few months weathering. Brick should be thoroughly wet before being laid, preventing the absorption of the moisture from the mortar and causing it to cling to the brick. The thickness of walls should not be less than the following: The top story 13 inches; the next two below 18 inches; the next two below 22 inches; the next two below 26 inches; the next two below 30 inches.

To prevent the weakening of the walls by inserting the ends of beams into walls they should be corbeled out on each floor to form a four-inch ledge for the floor planks to rest upon, unless a four-inch ledge is made by the walls receding to smaller dimensions. Changes in the thickness of walls should be made on a line with top floor beams. No wood planking, wood plates or wood lintels should be built in walls.

In some instances, builders prefer to build wood plates in wall extending the full length at each floor level, for the purpose of supporting the floors. The wood plates enable them to lay the floor quickly and the floor requires no leveling. Introduction of these wood plates in the wall weaken it by reducing the thickness at that point and the shrinkage of the wood plates renders the floor at that point leaky.

Party or Division Walls. As these walls, in the event of fire, are apt to be subjected to severe heat and shock from portions of buildings which they separate falling, it is necessary that they be built heavier and stronger than called for in exterior wall construction, and all party or division walls and bearing walls over 100 feet in length should be four inches thicker than the thickness called for in exterior walls, and the walls should be carried three feet above the roof and be coped with stone, cast iron or tile and corbeled sufficiently to extend past the cornice line.

Flues. Flues for heating stoves should not be less than eight inches thick or, if lined with cast iron flue lining, the thickness may be reduced to four inches. Base of flue should not be supported upon any floor, but should be built from the earth. Flues for boilers, furnaces, etc., which heat the flue to a high temperature should be provided with double walls of a combined thickness of thirteen inches, leaving an air space of two inches in thickness for a distance of at least twenty-five feet above the smoke inlet. This inner wall should

be constructed of fire brick, laid in fire clay mortar. The area of the flue should be adequate for the service required. All woodwork should be trimmed away at least two inches from outside wall of flue and the space thus formed between trimmers and wall left open for ventilation, and no beam, girders or other woodwork should enter a wall within twelve inches of the interior of any flue.

Columns, Beams and Girders. In buildings of this type it is preferable that all columns, beams and girders be of solid timber. Unprotected iron and steel supports are very unreliable and will bend and twist quickly under heat. No metal supports should be used unless properly fireproofed. Stone or granite must not be used for any of the interior supports. The columns, beams and girders should be of such dimensions as to easily bear their respective strains after allowing an inch for charring on all sides. No timber, however, should be less than eight-inch dimension. They should be planed smooth on all sides which may be exposed to action of fire. Special precaution should be taken to secure ventilation around ends of timbers where entering walls, to prevent dry rot. Beams and girders should rest upon cast iron wall boxes built in the wall. All beams and girders should be beveled at top, properly anchored to wall, but in such a manner as to be self-releasing, so that, in the event of a serious fire, their falling will not pry down the wall. The most simple arrangement is notching the under side of beams near the end and fitting the notch over a lug arranged upon the wall box. Columns should be continuous throughout all stories and ends connected with cast iron caps, pintels and base plates and also be arranged in such a manner as to be self-releasing. Where iron columns, girders and beams are used they should be protected by fire-proof covering of Portland cement concrete, not less than two and one-half inches thick at any point, or well burnt terra

cotta, fire clay hollow tile of not less than three inches thick, and all joints thoroughly filled with Portland cement mortar. Timbers entering party walls from opposite sides should have the ends separated by at least eight inches of brickwork. A compromise construction, consisting of built-up timbers of small dimension, bolted together with washers placed between the timbers to prevent dry rot occurring in the timber, has not proven satisfactory, as there is more surface exposed to the flames, and fire in these crevices cannot be reached by streams.

Floors. In the construction of floors, we have one of the most important features of the slow-burning building, and, if properly built, the floors will retard fire for a considerable length of time. They should be solid, without any openings, and, as the ceilings are open and smooth, effective service from hose streams may be obtained, providing the building is not of excessive area and height. Floors should be double, the under floor of plank, the upper floor of hardwood at least seven-eighths of an inch thick, tongue and grooved. Floors should be laid directly upon the beams or girders. The under or heavy floor plank should be planed on the exposed surface, splined or tongue and grooved, and at least two and three-fourths inches thick. For bays exceeding eight feet, the thickness of the plank should be increased. Between two floors two thicknesses of asbestos paper should be laid, care being taken to break joints, and paper should be turned up at least three inches at walls and secured in place by two inch moulding, nailed to floor. Ordinary roofing paper has been used to some extent, with an attempt to make the floor water-tight. Roofing paper is of little service, as it becomes torn through the shrinkage of the planks. It is neither water-tight, nor does it act as a fire retardent. The floors may be arranged to drain, by sloping them toward scuppers arranged

in walls. The scupper should be placed about two inches below the level of the floor. Openings in the floors for steam and all other pipes, to prevent water from passing through openings made for pipe, should be provided with wrought or cast iron thimbles made water-tight at the floor, and extending three inches above it. No openings should be made through floors for elevator ropes or belts, but they should be enclosed within the brick walls of elevator shaft. Woodwork should not be painted or varnished. Fireproof paint for the under side of the floors may be used, but it is preferable not to paint the heavy woodwork until it has been up for some time and becomes dry.

Roof. The roof should be constructed of plank and beam; plank to be tongue and grooved or splined and not less than two and three-fourths inches thick and planed upon the under side and covered externally with metal, composition or tile. A very acceptable roof is constructed of two thicknesses of asbestos paper laid directly upon the top of roof planks, one thickness of roofing felt upon the asbestos paper and the roofing felt covered with tar and gravel. A roof constructed in this manner will hold a fire from within the building until the upper part of the building is nearly destroyed, lessening the chances of ignition of exposed buildings.

In all structures constructed upon roof, adjoining outside or division walls, the walls should be carried up as fire walls at least thirty inches above the roof of such structures, and, if the other enclosing walls are not wholly of incombustible material, the walls should be extended at least thirty inches beyond such intersecting wall. All other roof structures should be constructed of three-inch plank covered on the outside with metal or tile. Sash, if required, should be of approved sheet metal and wire glass.

Cornice. Cornice should be of brick, terra cotta or metal on metal brackets. No roof timbers should enter the cor-

nice, or be used for the support of cornice. The parapet wall should be built out, to cut off cornice from any adjoining building.

Stairways and Elevators. Stairways and elevators should be enclosed with walls of brick or Portland cement concrete and, where used as bearing walls, they should be of standard thickness for their height; non-bearing walls may be four inches less in thickness, but no wall should be less than thirteen inches. Portland cement concrete walls, when reinforced with steel, or iron columns and beams, of sufficient strength to carry floors and their loads, should be not less than twelve inches thick. All steel and iron should be protected with, at least, two and one-half inches of concrete. Walls should extend at least three feet above the roof. All doors opening into the shaft should be protected by standard, automatic metal clad fire doors. Rolling steel shutters have been used to some extent for the protection of these openings, but this class of shutter is not reliable, cannot be closed quickly, is difficult to repair and is not to be recommended. Doorways into shaft should have iron or concrete sills, and the sills should be sufficient in width to cover bottom of door and full thickness of wall. Stairs in shaft should be of incombustible material. The bottom of stair shafts is used at times for general storage, and, if the stairs in shafts are constructed of wood, a fire at the base of shaft would extend to the top and, possibly, communicate with the various floors of building. The elevator shaft should extend three feet below basement floor level, and should be provided with adequate drainage connected with the sewer. Roof for shaft should be provided with skylights with one-fourth inch rib glass protected with wire netting placed directly over elevator. The elevator shaft should not be obstructed at the top by solid floors or platforms for the support of elevator motors or machinery; if extend-

ing over shaft, floor should be of open lattice work, permitting the free discharge of smoke through skylight in case of fire. Dumb waiters should be enclosed within fireproof shafts, constructed of Portland cement concrete and steel not less than four inches thick. All openings into shaft should be protected with automatic fire doors.

Interior Finish. All partitions dividing a floor into compartments should be of brick, tile, terra cotta, or iron studding, with iron lath and plaster; no wood studding, lath or furring, or enclosed raceways enclosing wires or pipes should be permitted, and wainscoting, if used, should be attached directly upon the wall and should have no hollow space behind it.

Exterior Openings. Openings in exterior walls should be as few and small as possible and be protected with standard coverings. The openings for windows on street side should not exceed 60 per cent. of the wall area and the openings for windows on sides exposed should not exceed 30 per cent. of the wall area. Windows and door sills should be stone, iron or other incombustible material, and the sills should be of an equal thickness with the wall and project sufficiently to cover bottom of fire shutters. This is of importance as, in many cases, shutters do not fit sufficiently close to the walls to exclude flame from an exposing building. The exposure of openings overlooking alleys and roofs of adjoining buildings is very severe and these openings should be protected in a substantial manner with standard metal clad fire shutters, fitting closely to wall, or by standard metal frames and sash with wire glass. Sheet metal shutters warp easily under heat, convey fire to interior or building through radiation and have not given satisfaction.

Openings in Party or Division Walls. Openings through party or division walls into adjoining building should be provided with double, metal clad, automatic fire doors, and all

shaft and belt holes should be made as small as possible by being bricked up or by being provided with double, metal clad fire shutters or metal hoods. It is impossible to thoroughly cut off spouts and conveyers, and their passage through division walls should be prevented, if possible.

Boiler Rooms. Boilers should be located in fireproof compartments, walls constructed of brick of at least thirteen inches in thickness. Ceiling should be constructed of cinder concrete, tile, or be of brick arch construction. All openings into buildings should be protected with standard automatic fire doors. A nine-inch brick wall is of insufficient strength to permanently support the weight of fire doors. Breeching of boiler should connect to a brick stack, and not to metal smoke stack, arranged outside of external wall. The boiler room should be of sufficient area, preventing the crowding of contents.

Area. The height of buildings, unless of fireproof construction and intended to be occupied for office or hotel purposes, should not exceed the height available by the local fire department. The highest apparatus used by fire departments for elevating hose nozzles are extension trucks, and these trucks are made to a height of seventy-five feet, and so arranged that hose nozzles may be operated at the top of ladder. Only very large cities have sufficient of these trucks to place a number of streams in operation. Hose streams operated from the ground level to the upper stories of a building are not effective, as the water is thrown but a short distance within the building to the ceiling, falling upon the floor, leaving the center of the building unprotected. In large cities having first-class fire departments, buildings should not exceed five stories in height. Unless the building is protected with automatic sprinklers, the area of the building should not exceed 5,000 square feet. Buildings of larger area should be subdivided by division walls, communicating through openings

provided with automatic fire doors. Buildings of very large area filled with combustible stock, stock at times piled to ceilings and in a manner that prevents sending streams to center of floors, are not safe when of any known construction, as fires occurring can not be extinguished and the heat will be sufficient possibly to destroy the building.

"Fireproof" Construction. Buildings of this type differ from the slow-burning building in the construction of the floors and roofs, the floors and roof being constructed wholly of non-combustible material such as cinder concrete, tile or brick, supported by protected steel work. In the skeleton type of fireproof construction the entire load is carried by a framing of steel, all exterior columns being protected by fireproofing of sufficient thickness to protect the steel work. While the building may be constructed wholly of non-combustible material, the interior, if filled with inflammable material, thoroughly afire, would be likely to cause a total or a partial destruction. Buildings of this type are superior to slow-burning buildings on account of there being no combustible material used in their construction, but it is necessary that all steel framing for floors and all columns supporting the floors, be properly protected with tile, terra cotta, brick or concrete of sufficient thickness to thoroughly protect them from excessive heat. Vertical openings through floors of buildings of this type are just as objectionable as in buildings of slow-burning construction, and all elevators, stairs, etc., should be enclosed with brick shafts with openings communicating with each floor protected by automatic fire doors. The cost of buildings of this type is about 20 per cent. more than the cost of buildings of slow-burning construction, and the difference in rate of insurance is such that it is a very excellent investment for prospective builders to erect buildings of this type, and they are coming into more general use.

Fire Doors. The best fire door is the wood, tin-clad door, hung upon a rail which is fastened to the wall on an incline and so arranged with fusible link that upon the melting of the fuse the door will automatically close. This automatic arrangement should not be such as to prevent the doors from being closed by hand when the openings are not in use, and the doors should be operated daily. If allowed to stand open the doors become blocked with stock, and cleated open at the floor, and pulleys supporting door are apt to stick on rail. Wood tin-clad doors not exceeding forty-eight square feet should be made of two thicknesses of well-seasoned white pine of at least seven-eighths inch thickness each; one layer to be vertical, and the other layer to be at right angles; layers securely fastened together by wrought iron clinch nails. The doors should be thoroughly covered upon all sides and edges with heavy tin plates not exceeding 14 x 20 inches in size, and all joints locked and nailed under seams. The door should be of sufficient area to cover the opening, which it is intended to protect, two inches upon all sides and top. Doors exceeding forty-eight square feet of area should be constructed of three thicknesses of seven-eighth inch white pine placed together and covered as described above. The value of the door will depend upon the quality of the tin and the manner in which the joints have been made, as the covering must be sufficiently tight to exclude oxygen, preventing combustion of the woodwork. Hardware for fire doors should be of wrought iron, as cast iron fractures upon application of water when heated. Fire doors constructed wholly of iron or steel warp under heat, carry fire through the openings they are intended to protect by radiation, are not easily repaired, and have given very poor satisfaction.

Electric Wiring for Light and Power. Electric lights, both incandescent and arc, are in general use and afford the

safest and most convenient means of furnishing light and power at the present time, when the wiring is properly installed and maintained in good condition. There being no concealed spaces in buildings of slow-burning construction, the wires are supported upon the ceilings and walls in plain view, where any existing defects may be discovered and remedied.

Where the circuits are supported upon the ceilings they should follow the contour of the beams and be securely fastened thereto, by sufficient porcelain cleats to securely hold them in place. Wires supported in this manner will remain in position and do not disfigure the ceiling. Wires supported from beam to beam sag and loosen at supports, and, within a short time after installation, hang in loops and easily become crossed. Insecure fastenings, loose connections in joints, switches and cutouts, are responsible for most of the fires caused by electricity.

The wires, switches and cutouts should be of ample capacity; the switches and cutouts constructed of non-combustible material; all connections well and securely made and circuits protected by proper sized fuses. Fuse metal, if properly proportioned, melts at a less temperature than the copper of the circuit, interrupting the flow of current upon a short circuit or excessive flow of current, when occurring from imperfect insulation, causing leaks to occur or overloading of the circuit above the capacity of the wire. The over-fusing of a cutout is similar to the over-weighting of a safety valve upon a steam boiler. The probable result would not be as disastrous in the electrical installations as in the boiler installation, but the over-fusing of the cutout would as surely cause fire to occur in the event of a short circuit. All fuse metal should be properly enclosed, preventing the ignition of combustible material nearby from the blowing of the fuse.

Protection. Results have shown that very excellent protection may be expected from automatic sprinkler service in

buildings of slow-burning and fireproof construction, and, where buildings of these classes are protected with sprinkler equipments, the area of the buildings is not of so much consequence. An automatic sprinkler equipment consists of an arrangement of pipes regularly spaced under all ceilings and extending to all closets, rooms, under benches and all concealed spaces with automatic sprinkler heads or valves attached; the system of piping being supplied automatically with water from elevated tanks, pressure tanks, city connections or pumps. Two of any of the above sources of supplies being necessary for standard equipments and in cities having fire departments, steamer connections are attached to the equipment in such manner that the fire department may pump directly into the system, reinforcing the supplies. There are two kinds of equipments—wet pipe systems in which the pipes are continuously filled with water, and dry pipe systems, the pipes of which are filled with air as far as the automatic valve, which is held closed by the pressure of the air. In buildings where the temperature is such that the water in the pipes would be apt to freeze, dry systems are installed. Wet systems are preferable as their operation is more prompt, and there is less opportunity for this class of equipment to become disarranged, as there is no obstruction to the flow of water, when the main valve is open, but the sprinkler heads. The sprinkler heads, or valves, are sealed close with fusible solder melting at temperatures ranging from 165 to 360 degrees, the desired sprinkler being determined by the temperature of the place in which the sprinkler is to be located; dry rooms, ceilings directly above furnaces, etc., requiring sprinklers which open at a higher temperature than would be required in ordinary mercantile risks. On account of smooth ceilings and absence of vertical openings through floors and concealed spaces at walls, sprinkler protection in buildings of

slow-burning and fireproof construction is more effective than in buildings of joist construction. In joist construction, the space between the joists is, to some extent, out of reach of the distribution from the sprinkler heads, and fire obtaining headway in these spaces must be extinguished by hand. Sprinkler heads should be so located as to protect all parts of the premises. The number and spacing of sprinkler heads is determined by the construction of the ceiling and class of stock contained in building. Under open joisted construction the pipes should be run at right angle to joists, not more than ten feet apart, and sprinkler heads placed not to exceed eight feet apart on pipes and the sprinkler heads staggered—that is, the sprinkler heads be so located as to distribute water into alternate joist channel ways. In sprinkler protection the most important question is that of supplies. An equipment, if installed in the most approved manner, unless with adequate supplies cannot possibly render as good service as an inferior equipment with good supplies.

Two sources of supply are necessary, to lessen the chances of a water shortage in time of fire. One of the supplies should furnish water under a heavy pressure, that the first sprinklers opened may be as effective as possible.

Public water works, having adequate sized mains and providing a continuous heavy pressure, are most desirable. Next in value are pressure tanks which furnish an excellent primary supply, especially in connection with wet pipe sprinkler service. Pressure tanks are not so effective for dry pipe sprinkler service, as much of the initial discharge is consumed, in filling of the empty pipes. The tanks should not be placed below the top floor, and better service is obtained if located upon the roof, as less air pressure would be necessary to expel all of the water under good pressure, the tank being above all of the sprinkler heads. Pressure tanks are cylindrical in

shape, constructed of steel, air-tight, and the size of the tank generally used is sixty-six inches in diameter and twenty-five inches in length; total capacity, 4,500 gallons; water capacity, 3,000 gallons; two-thirds of the tank containing water and the remainder filled with air under pressure.

The number of tanks necessary depends upon the number of sprinkler heads per floor, and, if the tank supply is of a capacity to supply 20 per cent. of the sprinkler heads upon the floor having the greatest number, allowing 200 gallons of water per head, the supply will be considered sufficient. No tank, however, should be of less than 4,500 gallon capacity.

Gravity Tanks. Greater quantities of water may be stored in gravity tanks, as no air space is required. The tanks should be of a capacity sufficient to provide 5,000 gallons for each 100 sprinkler heads upon the floor having the greatest number.

The pressure of the water delivered from gravity tanks is wholly dependent upon the height of the tank above the highest sprinkler heads, and the tank should be elevated as high as possible. The bottom of the tank should not be less than fifteen feet above the highest sprinkler heads.

Gravity tank supply should not be used as a primary source, as the pressure, dependent upon the length and size of pipe, fittings and deposits, is often insufficient to discharge the water into ceilings, but will answer very well to wet all material below the sprinkler heads.

Pumps. Pumps as a source of supply for sprinkler service are less desirable than any of the supplies referred to above, due to their liability of being out of order through disuse, lack of care, and on account of their limited supply while in operation.

When installed, Standard Underwriter pumps should be used. They differ from the ordinary trade pump in being constructed of greater strength to withstand excessive strain;

the steam and water passages are of greater area; and the plungers, piston and valve rods and lining of stuffing boxes are constructed of non-corrosive metal, preventing as far as possible the disability of the pump from rust.

The pump should be provided with automatic steam valve, adjusted to maintain a continuous high pressure. Where pump is intended for primary service, recording steam gauge should be provided.

Automatic Sprinkler Alarm. Sprinkler equipments are provided with an automatic alarm arrangement, which sounds a warning when the water within the pipe is set in motion, caused by the opening of a sprinkler head, or pipe, by accident or fire. When kept in proper order, too much importance can not be placed upon the alarm, as serious water loss may result from a small fire, which the sprinklers extinguish, if the flow of water is not checked. Several severe losses have occurred in this manner.

Outside Sprinklers. For the protection of cornices, structures on roofs, and openings in exposed walls, a well designed system of outside sprinklers affords the best protection.

The supply should never be taken from the supplies provided for an automatic sprinkler system, but from independent connections from stand pipes or city water works. Where the local fire department can be induced to attach to the equipment, steamer connections should be added. Open automatic sprinklers are not acceptable for this use. Specially arranged sprinkler heads discharging the water against the building have been designed.

The piping should be adequate, as all of the sprinklers are to be operated at one time, discharging a considerable amount of water.

The equipment should be provided with a separate riser for each two floors, all risers connecting with a main on the

lower floor, through cut off valves. The risers should pass through the floors, and short extensions from the cross mains project through lintel of each window frame, to the exterior part of frame. One sprinkler head at each opening is sufficient to protect windows not exceeding four inches in width.

For the protection of cornices, the sprinkler heads should be spaced six feet apart.

High Pressure Service. For the protection of congested districts in large cities, exposed to sweeping conflagration, a system of high pressure service supplied by a sufficient number of stationary pumps, is far in advance of the present method of reinforcing the pressure from water works with steam fire engines.

The great height to which buildings are now erected, narrow alleys and streets, unprotected openings of buildings, increase the conflagration hazard to a considerable extent, and the present method of supplying hose streams from steam fire engines is slow and inadequate.

A very excellent high pressure system, such as has been referred to above, has been installed for the protection of the buildings of the Louisiana Purchase Exposition, and, while a number of fire engines will be kept upon the grounds, it is not intended to use them, except for pumping into some of the sprinkler systems which will be installed.

Hose connections will be made directly to fire plugs and continuous pressure maintained in system by stationary steam pumps provided with automatic valves.

The mains are of extra strength of wrought iron pipe and ends connected together with threaded couplings.

All exterior mains are laid in the earth below the frost line and tested to 300 pounds per square inch after installation.

The trunk lines consist of three twelve-inch pipes, extending the full length of the grounds, and these lines are cross

connected with eight-inch, ten-inch, and twelve-inch pipes between each two buildings, each connection being provided with a cut-off valve enabling any section to be disconnected, in the event of a break, without disabling the service.

Two six-inch feed pipes connect with four-inch circulating mains in each building, supplying the interior fire hydrants. Extensions are taken from the four-inch circulating mains to roofs of buildings and supply numerous hose connections.

A sufficient number of three-inch deck turret nozzles, connected with the underground mains by six-inch connections, are located upon platforms in the main buildings, to discharge water over the interior of the building in the event of serious fire.

For exterior protection three way, self-draining hydrants are placed one hundred and fifty feet apart, and about one hundred feet distant from buildings. The hydrants are sufficiently close to avoid the necessity of running long lines of hose, thereby reducing the pressure through resistance.

First class two and five-eighths inch fire hose is expensive. A fifty-foot section of the best hose costs more than a hydrant. The deterioration of hose is greater than that of a hydrant, and it is economy to install hydrants in sufficient number that less hose be required.

The water supplies will consist of fourteen Worthington "Underwriter" pumps, of one thousand gallons capacity each, taking water, through a twenty-four inch suction pipe, from a reservoir of six million gallons capacity, and discharging into the system of pipes through a twenty-inch main.

The elevation of the reservoir is above that of the pumps, and the water is delivered to the pumps under about five pounds pressure.

The system is also connected to the city water works service, through several connections to twelve and thirty-six inch pipe,

furnishing a supply from this source under pressure from ninety to ninety-five pounds.

These connections are provided with check valves, preventing the pump pressure, which is the greatest, from passing into the city pipes; if the demand exceeds the capacity of the pumping plant, the check valves will open automatically.

A separate system for domestic service has been provided, and the high service system will be used for fire protection exclusively. The pumps are located in a fireproof building, which is also to be occupied as a boiler house. The building is exposed by the machinery building, one hundred feet distant. The exposed wall is to be protected with outside sprinklers.

Sufficient boiler capacity will be furnished and each pump is provided with independent supply and exhaust pipes, the supply pipes connecting with a steam main connected to independent batteries of boilers.

Fire Hose. At present 29,000 feet of two and five-eighths inches cotton, double jacket, rubber lined hose, for outside hydrant use, has been provided, three feet samples of this hose, before purchase, passing the test for strength required by the National Board of Underwriters. This test requires, in three feet lengths, bursting pressure to average not less than:

When straight	500 lbs.
When curved, radius two and quarter feet	500 "
Ends tied together, sharp kink in center....	300 "

Most samples leaked or burst when subjected to the curve test. The above requirements are more severe than needed for private fire protection service, but, as the hose tested was of the kind sold and generally used by public fire departments where wear and tear is considerable and heavy pressure fre-

quently carried upon the hose, due to long lines kinks and curves, the test for strength should necessarily be severe.

Some of the samples of hose tested showed an excessive twist under pressure, sufficient, in a length of fifty feet, to loosen the couplings and cause leaks.

Hose should show little tendency to twist, and the twist should be in the direction to tighten and not to loosen the coupling.

Cheap hose is a disappointment, and the most expensive in the end. Many fires have gotten beyond control on account of the bursting of hose just at the time when most needed, and the hose provided for use in the public fire departments should be of the very best.

For the protection of the interior of the buildings, hydrants are placed one hundred and fifty feet apart. One and one-half inch hose is provided for these hydrants and hose connections on roof, as it is believed that hose of this size can be more quickly handled and placed in service.

The hose connections of the interior hydrants are bushed down for connection with the one and a half inch hose and the heavy hose can be attached to any of the hydrants by removing the bushing.

Fire Alarm System. The fire alarm system is to consist of two hundred and twenty-five fire alarm boxes distributed about the various buildings and grounds. One hundred and twenty of these boxes are now in place.

There are two box circuits for each building, and the boxes will alternate on circuits so that all of the boxes in any one building will not be dependent upon one circuit.

The circuits are placed in a subway and protected from lighting and power wires and extend to a central station located in engine house No. 1.

Operators, serving eight hours watch each, are in attendance day and night, and all alarms are received and sent out from this office.

The central station is connected with the city fire alarm office by box circuits and telephones. .

Construction of Buildings. The buildings, except the Fine Art Buildings, are constructed of frame, composition and gravel roofs, exterior walls covered with stucco and interior walls coated with whitewash.

Where hollow walls occur, the hollow space is broken by vertical and horizontal fire stops, preventing any fire which may occur from spreading in walls.

All burlap, bunting and other inflammable material used for decoration will be chemically treated, preventing its rapid combustion.

MARINE INSURANCE

ITS RISE AND GROWTH IN THE HISTORY OF THE WORLD

BY A. A. RAVEN

We are now to consider marine insurance, a branch of indemnity relating to maritime property. It is far more complex than any other system of insurance. It essentially differs from either fire or life insurance. The former promises indemnity for loss caused by a single possibility, and the latter provides for a certain occurrence which may be regarded as inevitable. Marine insurance, however, covers the whole range of occurrences within the limit of maritime venture, as will appear as the subject is unfolded.

A learned American jurist* thus presents the subject of marine insurance:

"The practice of insurance is of vast benefit to the commercial world. It binds it together in a kind of community. It divides losses and profits. It begins with taking by way of premium a small part of the profits, and in return it divides all losses in such a way as to make them endurable by all. Hence, mercantile enterprises become practicable and prudent, which would never be undertaken if a disastrous issue must fall with crushing force upon the undertakers. Men of small capital are safe in carrying on a comparatively large business, and commerce generally is thus enlarged and protected by the practice of insurance. It is easy to see this so clearly that

* Parsons on Insurance, Vol. 2, p. 49.

the desire becomes very strong to extend the benefits of insurance as widely as possible by making it divide all losses and provide indemnity for every disaster."

\\ Marine insurance is the oldest form of indemnity. Even as it has been practiced in more recent times it antedates both fire and life insurance, having its beginning in the early dawn of commercial activity in Western Europe. It did not, however, crystallize into a system until the commerce of the world became a unit as respects its usages and requirements, and then, through the development of maritime laws, it assumed definite and clear shape. \\ Although nothing special can be found in the annals of the early maritime states on the subject of marine insurance, there are intimations of the use of something analogous to it which is now known as bottomry and respondentia, the former denoting a mortgage on the vessel, and the latter a loan on the cargo. This system of loans was quite extensively practiced at an early date and was probably resorted to on account of the legal prohibitions against usury. This prohibition was the result of the prevailing impression in that age, that receiving interest for the use of money was abhorrent to the Divine oracles.

In the system referred to large premiums were paid for the use of money, as well as for the maritime risk, because in the event of the loss or capture of the vessel and cargo, the money could not be recovered. This form of loan appears to have been permitted by law. It differs from ordinary mortgages in that the contract is only binding as far as there is property to answer the loan and that the last bottomry has the precedence. The practice is now resorted to only in case of necessity, when repairs are needed to the vessel, or salvage claims incurred, and the owner is not within reach or is unable to provide funds. In such cases, the master of the vessel is authorized to negotiate the loan.

The Rhodians, during the brief period of their commercial activity, from 893 to 916 B. C., made marvellous progress in developing their commerce, and in establishing codes of maritime laws. An English writer on marine insurance* of the eighteenth century says :

"The Rhodians were the first legislators of the sea and promulgated a system of marine jurisprudence to which even the Romans themselves paid the greatest deference and respect, and which they adopted as the guide of their conduct in naval affairs. These excellent laws not only served as a rule of conduct to the ancient maritime states, but, as will appear from an attentive comparison of them, have been the basis of all modern regulations respecting navigation and commerce." The same writer says that Emerigon, the distinguished French writer on maritime insurance and bottomry, is of the opinion that the real laws of the Rhodians have never reached us, and that the fragments which we see are certainly apocryphal.

It matters little as to which of the two writers is correct. The system of maritime law known as "General Average" was certainly borrowed from a commercial nation prior to the Roman Empire, and was incorporated in its marine jurisprudence and handed down to their successors in commerce as a system deserving of highest commendation, being the essence of equitable adjustment of all marine losses where community of interest is involved. General Average is more directly connected with maritime law and is a most interesting phase of that part of jurisprudence, but it has become so blended with marine insurance that an explanation of it is essential in dealing with the latter subject. Reference will again be made to it.

\\ We notice the further development of marine insurance in the operations of the Hanseatic League. This league dom-

* J. A. Park on Insurance, pub. 1796.

inated the commerce of Northern Europe for nearly 400 years, from 1239 to 1630, and during its activity its influence was probably more potent in advancing the commerce of the then commercial world than any other agency. Its organizations were controlling factors in moulding the destiny of the state, and, eventually, became so obnoxious to the later sovereigns of England that in the reign of Elizabeth the merchants of the steel-yards, their representatives in London, were expelled from the country. During its domination, this league founded a chamber of insurance at Bruges in Flanders, as early as 1310. That city was, at the time, one of the great centers of trade, and the demand for the protection of insurance showed that it was a necessity. Wisby in the Baltic was also an important emporium of the league and the code known as the "Laws of Wisby," compiled about the close of the thirteenth century, clearly shows its extensive commercial operations at that time.

The more direct introduction of marine insurance in the British Isles was by the Lombards, who settled in that country in the fourteenth century. In London they were the great money lenders, and were then known as usurers. They combined with their business of banking the practice of marine insurance. The form of "policy" now used appears to have been introduced by them from Italy. The name denotes Italian origin and is supposed to mean a promise. The policy, being thus brought down from mediaeval times, partakes largely of the quaint language of an early period. An English judge pronounced it "an absurd and incoherent instrument. But it has obtained a clear and definite meaning through a prolonged series of judicial decisions." Almost every word of it has been weighed in the judicial balance and assigned its proper value. Reference is made to the remarks made by Mr. Justice Blackstone in his celebrated Commentaries: "The

learning relating to marine insurance has of late years been greatly improved by a series of judicial decisions which have now established the law in such a variety of cases that if well and judiciously collected they would form a very complete title in a code of commercial jurisprudence.”*

Some changes have been introduced into the form of policy used in the United States, but the original enumeration of the perils insured against has been retained and, I believe, is used by all marine insurers. Too much time would be required to give a complete analysis of the policy, but a few reflections may be necessary to throw light upon the part relating to the risks assumed by the insurer. As respects that part of the contract, the policy reads:

“Touching the adventures and perils which the said insurer is contented to bear and takes upon itself, in this voyage, they are of the seas, men of war, fires, enemies, pirates, rovers, thieves, jettisons, letters of mart and counter-mart, reprisals, takings at sea, arrests, restraints and detentions of all kings, princes or people of what nation, condition or quality, soever, barratry of the master and mariners, and all other perils, losses and misfortunes that have or shall come to the hurt, detriment or damage of the said goods and merchandise or any part thereof.” The perils thus enumerated are used synonymously with the losses arising from them.

The originators of the policy evidently had in mind serious perils to which maritime ventures were exposed from the violence of man, both as a marauder and in the exercise of warlike operations which in early times, in the latter case, were almost perpetual. It is not to be wondered at that they were thus apprehensive. Piracy and buccaneering did not cease with the dawn of a higher civilization, nor were such practices restrained, but continued even when the mediaeval

* Martin on the History of the Lloyds.

spirit had given way to nobler purposes in other respects, for we find that as late as in the reign of Queen Elizabeth of England, that sovereign recognized the exploits of a noted marauder and conferred upon him the honor of knighthood.

It is interesting to follow the operations of Drake and other noted exploiters on the ocean at that period, and their captures. Considering their performances at that time will make clear to us what Shakespeare meant when he said:

"Ships are but boards, sailors but men,
There be land rats and water rats,
Land thieves and water thieves, I mean pirates,
And then there is the peril of waters, winds and rocks."

—*Merchant of Venice, Act I, Scene III.*

But in writing this mot the great English bard did not suppose that the time would ever come when ships would not be but boards. The modern substitution of iron and steel has indeed given the power of greater endurance and increased durability to ships, but sailors continue to be but men. We have reason, however, to be grateful that they are a nobler and worthier class of men; science has also enriched them with skill and knowledge and the annals of our own country contain the record of illustrious seamen of whom any nation may well be proud.

Letters of Mart and Counter-mart. The first is authority to make reprisals on an enemy's property. Commissions were given by governments at war to private vessels to make such reprisals on the high seas and the practice is commonly designated privateering. Letters of counter-mart represented a similar authority to private expeditions to resist those empowered to make captures through letters of mart. Both of these come under the risk of war. By the declaration of maritime law adopted at the Congress of Paris in 1856, this system of preying upon an enemy's property upon the high

seas by privateers was abolished. The United States and Spain, however, did not concur in the declaration.

Barratry of the Master and Mariners. The word barratry appears to have been derived from the Italian "barratore," meaning fraudulent dealing, fraud, etc., and represents all dishonest practices whereby the shipowner or others interested are defrauded. The ship may be wrecked, fired or abandoned with fraudulent intent. It is to be observed that to constitute barratry under an insurance the owner must not be privy to nor cognizant of the act. Formerly barratrous acts were quite common, but in recent years they have become rare in their heinous form.

The scope of the policy, it will be noticed, is exceedingly broad and the terminal expression, "and all other perils, losses and misfortunes, that have or shall come to the hurt, detriment or damage of the said goods and merchandise or any part thereof" would indicate a further broadening of the contract, so as to include all possible perils; but the real intent and meaning of the policy does not include any other perils than those of the sea, and the losses for which the insurer assumes liability are those which are caused from those perils through fortuitous or overpowering circumstances and not by any inherent defect in the subject insured. This latter is legally termed "*vice propre*," as for example, any article that during the ordinary course of transportation necessarily becomes deteriorated by the inevitable result of defects in itself. Such losses are not recoverable in marine insurance. It will be observed that hazards named "*perils of the sea*," and which are contemplated as a marine venture, are those resulting from the violent action of the elements,—all casualties as distinguished from the ordinary undisturbed prosecution of the voyage. The original form of policy did not provide any limit as to the liability of the insurer. In

the course of time, experience demonstrated the necessity of limiting his burden and excluding from the policy liability for losses arising from natural causes as before referred to. In the year 1749 a committee of Lloyds, London, decided upon the introduction of a clause in the policy known as the "memorandum." In this clause, the various articles which were then more particularly subjects of insurance were divided into classes, each of which was subject to special limitation. The first class was composed of articles peculiarly susceptible to damage, viz.—corn, fish, salt, fruit, flour and seed. With respect to these articles, claim for damage or partial damage was excluded, unless the vessel stranded. The second class consisted of articles less liable to damage, such as sugar, tobacco, hemp, flax, hides and skins. As to these goods, liability for damage was excluded unless amounting to 5 per cent. The third class included all other goods as well as the vessel and freight. These were insured excluding liability under 3 per cent. unless the vessel stranded. A similar clause was introduced in their policies by American insurers in 1840, but the articles excluded as to damage were considerably increased. At that time the importations into the United States were made up of articles, some of which were regarded as peculiarly susceptible of damage. More recently these conditions have been materially modified, and changes have been made to conform to the requirements of commerce, and extra premiums to cover the increased liability have been charged.

In the early practice of marine insurance, the applicant prepared the policy on a form furnished to him and submitted it to the insurer and, if accepted by the latter, he signed it and thus he became what is now known as "the underwriter." The contract is signed by the underwriter only, but the assured also assumes certain obligations. It is quite manifest that

good faith is an essential element in negotiating all contracts, but peculiarly so in one involving such exceptional obligations and so complex in its character as a contract of marine insurance. Everything material to the risk must of necessity be frankly imparted to the underwriter and he, in turn, should carefully consider the interest of the assured when he accepts the risk. In the matter of valuation, the assured is entitled to insure his full interest in the venture, but he is not warranted in placing an excessive value on the property. If, however, the underwriter agrees upon a specified valuation, it is binding unless there be fraud. Misrepresentation or withholding anything vital to the risk vitiates the insurance.

An insurance may be made by the party in interest or through an agent. The practice is to submit particulars of the venture on which insurance is desired to the underwriter. A formal application is then prepared, outlining the details. This preliminary paper is signed by the applicant, and if the risk is accepted by the underwriter he also signs it and thus the contract is binding and the policy is subsequently issued, but, as before intimated, the policy is signed by the underwriter only.

There are also implied warranties, three in number, binding on the assured, although not incorporated in the policy. The first is that the ship or vessel is seaworthy; second, that she is to proceed without unnecessary delay from the port of departure direct to the port of destination; third, that she is not to engage in any illicit trade and conforms to all the requirements of law as respects her credentials.

As to the first of these, that is, the warranty of seaworthiness, the owner is under obligation to prepare her in all respects for the contemplated voyage, that is, on sailing, she must be tight and staunch in her hull, properly rigged (if a steamer, her machinery must be in good working condition);

she must have an ample supply of fuel, she must be stored with provisions and provided with competent master and crew, with all things necessary for the intended voyage. Her cargo also must be properly stowed and not in excess in weight over what she can prudently carry. In fine, everything pertaining to the ship, her equipment and cargo, must be on the line to insure safety, thus recognizing the obligation the shipowner has to the public, either as shipper of cargo or as passenger.

A careful consideration of these implied warranties as required by the common law will suggest to us both the wisdom and justice of them. It is proper to observe that the original form of bills of lading used in the shipment of cargo gave no immunity to the shipowner for loss or damage to the property shipped except in respect of losses caused by perils beyond the control of man to prevent or overcome, but in recent years attempts (as expressed by* a United States Judge) have been made to limit as far as possible the liability of the vessel and her owners by inserting in bills of lading stipulations against losses arising from her unseaworthiness, bad stowage and negligence in navigation, and other forms of liability which have been held by the courts of England, if not of this country, to be valid as contracts and to be respected even when they exempted the ship from the consequences of her own negligence.

As decisions were made by the courts from time to time, holding the vessel for non-excepted liabilities, new clauses were inserted in the bills of lading to meet these decisions, until the common law responsibility of carriers by sea had been frittered away to such an extent that several of the leading commercial associations, both in this country and in England, had taken the subject in hand and suggested amend-

* Justice Brown of U. S. Supreme Court in case of *The Delaware*, 161, U. S., 471.

ments to the Maritime Law in line with those embodied in the Harter Act. The act referred to bears the name of its author and was passed by the Congress of the United States in February, 1893. It renders null, void, and of no effect any clause, covenant or agreement, whereby the shipowner (styled it, he or they) shall be relieved from liability for loss or damage arising from negligence, fault or failure in proper loading, stowage, custody, care or proper delivery of any and all lawful merchandise or property committed to its or their charge.

The same act provides, that if the owner of any vessel transporting merchandise to or from any port in the United States shall exercise due diligence to make the vessel in all respects seaworthy and properly manned, equipped and supplied, that he shall not become or be held responsible for damage or loss resulting from faults or errors in navigation or in the management of said vessel.

It will be observed that the common law requirement as to seaworthiness, in other respects, is not abridged nor affected by the act, but much greater latitude is given in Great Britain to what is termed "special contract" in bills of lading. While this immunity from obligation certainly protects the shipowner, it can hardly be said to be in the interests of the public.

As to the second warranty, namely, making a direct passage, since the introduction of steam the modern form of bill of lading which is alleged to be a special contract gives liberty to deviate to any extent, so that with respect to steamers, at least, that warranty is largely modified.

As to the premiums charged for the various risks, the rate in each case is dependent upon,

First: The character of the vessel; this is deemed an important factor.

Second: The nature of the cargo.

Third: The dangers peculiar to the ports of loading and destination.

An underwriter is supposed to be familiar with the physical conditions of the different commercial ports of the world, as well as the nature of their products, the means employed in loading and unloading the vessel, the direction to be taken by the vessel in her voyage and the time consumed in making it. These are the elementary features of his qualification. To say that he should also possess a discriminating mind and the power of discerning occult conditions would be but the corollary of his required attainments.

The word "average" frequently occurring in connection with marine insurance may be here explained. It is difficult to trace the origin of the meaning as now applied, but the use of it in maritime affairs, particularly in insurance, doubtless suggests a contribution in a sea venture. Particular average in marine insurance is damage to or partial loss of particular goods insured for which a contribution may be due from the underwriter. As, for example, A insured ten cases of dry goods. On arrival at destination, one or all the cases are found to be damaged by perils of the sea; that would be "particular average"; or, if any number of the cases short of the whole were totally lost, would also be particular average, but, in the latter case, under certain conditions, it might be considered a "constructive total loss." This will be hereafter explained.

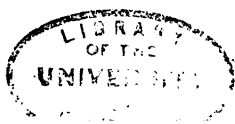
General Average is a contribution due from all interests in the venture, and if insured, recoverable from the insurer. General Average occurs under the following circumstances: If during the voyage sacrifice be made of any part of the ship or cargo, or any extraordinary expense incurred to prevent loss of the whole or to rescue the whole adventure from

unusual peril, or if the ship be on fire and water is poured into the hold to extinguish the fire, the cargo damaged by the water would be General Average, but the cargo damaged by fire only would be Particular Average, because the damage from that cause was accidental.

Likewise, if the ship should be thrown on her beam ends by shifting of her cargo, or from any other cause, and her spars are cut away to right her, or the hatches are opened and part of her cargo is jettisoned, i. e., thrown overboard to relieve her, the sacrifice so made, including the attending loss or damage in making it, would be contributed for in General Average.

The form of sacrifice termed "jettison" is more frequently resorted to than any other, and is perhaps the one that can more readily be made. When the hatches are opened for that purpose, if any of the cargo is damaged by water getting into the hold, such damage is also contributed for in General Average. There is particular interest attached to sacrifice by jettison, as it is one of the earliest recorded in maritime ventures and was at first probably the only one recognized in the system of General Average.

The experience of Jonah, the prophet, mentioned in the book of his name, sets forth most graphically the first cited instance of the kind. The prophet was fleeing from Joppa to Tarshish; the account says "the ship was like to be broken and the mariners were afraid and cried every man unto his God and cast forth the wares that were in the ship into the sea to lighten it of them." And again in that thrilling account given by the sacred writer in the 27th chapter of Acts, when the Apostle Paul was being conveyed as a prisoner to Rome, the record states: "And we, being exceedingly tossed with a tempest, the next day they lightened the ship and the third day we cast out with our own hands the tackling of the



ship." The principle of sacrifice enjoins that when made it shall be the most weighty and of the least value of the cargo, but in an emergency requiring such prompt action the proper selection cannot always be made. If the goods sacrificed are insured, the assured can recover from his underwriter assigning to him his right for contribution in General Average. The underwriter also is liable for the General Average contribution on property insured by him according to the sum insured, unless specially excluded in the policy. Cargo laden on deck, if jettisoned, is not, as a rule, contributed for in General Average.

General Average, as before mentioned, is a part of maritime law, and all commercial nations have endeavored to bring its practice within the highest rules of equity, adapting it to various principles as they are unfolded from time to time. Several International Congresses have been held for the consideration of the subject, notably, those at York, England, in 1864; and at Antwerp in 1877. At the latter Congress a new code was adopted and designated York-Antwerp Rules. This code is frequently referred to as a basis of agreement in General Average questions. But the practice as respects minor details varies somewhat in different countries.

Salvage is also a charge upon the property saved. The word salvage has a dual meaning. The dictionaries give the definition as "The compensation allowed to persons by whose voluntary exertions the vessel or cargo or the lives belonging to her are saved from danger or loss in case of wreck, capture or other marine misadventure"; and also "that which is saved from the wrecked or abandoned vessel." It will be noticed that both the compensation for saving and that which is saved is termed salvage.

"The ashes and shreds and wrecks of everything else are of some value, but of words not freighted with ideas there is no salvage."

As an illustration of the operation of salvage, various cases might be cited, but one quite illustrious, and which has, to some extent, been made the subject of romance, may be mentioned.

The Brig "Mary Celeste" sailed from New York on November 7th, 1872, destined for Genoa, Italy, with a cargo consisting of 1,700 barrels of alcohol. The captain was accompanied by his wife, and his child, and the vessel had a crew of seven persons. There were two passengers on the vessel. On the 27th of November, in latitude 38 north and longitude 17 west, the brig was sighted by the brig "Dei Gratia," and when boarded by a part of the crew of that vessel, no one was found on the "Mary Celeste," although under a full head of sail she appeared to have been sailing that way for three days. The last entry in the log book was made on the 24th of November. Her fore hatch was off, and, with the exception of the boats being missing,, everything denoted perfect order. The indications were that the people which were on her had left suddenly in the boats. She was towed into Gibraltar, the nearest port, and there the Admiralty Court awarded a salvage of £1,700—the equivalent of about \$8,300. This was a moderate compensation, being only about 18 per cent. on an aggregate value of \$47,000 for vessel, freight and cargo. It is not unusual when derelicts, i. e., abandoned vessels, are picked up at sea, for a salvage award of more than twice that percentage to be made to the salvors. No tidings have ever been received of the people who sailed in this vessel, although the Government used every means in its power to ascertain what had become of them.

Savings of property from shipwreck are also termed salvage.

We will now revert to the policy. The conditions in it are frequently changed by written clauses conforming to what is specially agreed upon between the assured and the underwriter.

In order to reduce the cost of insurance or for other reasons, the merchant may request the insurance made "free of particular average," which means that the underwriter will be relieved from liability for damage or partial damage to the goods. An insurance so made covers total loss and general average contribution. General Average is payable by the owner even though the goods be not insured. If insured the underwriter is liable for it, because the sacrifice or expense was incurred to save the venture from a total loss. The condition, "free of particular average," is now qualified in most insurances by adding "unless the vessel be stranded, sunk, burned, or in collision." It is a form of clause introduced in the English policies. Some American insurers use the words,—“unless caused by the perils enumerated,” that is, stranding, etc., thus eliminating the uncertainty as to the cause of damage.

The difference between the two forms may be explained as follows: If cargo be insured under the English clause, free of particular average unless the vessel be stranded, etc., and while the vessel is proceeding out of her port of loading, touches bottom and remains ashore, even for a brief period, without sustaining any injury, it would be deemed a case of stranding, and although the cargo might not be damaged or injured in any form by such stranding, yet the fact of that innocuous stranding would cause a change in the policy, and the cargo insured would then be subject to, instead of free of particular average, and for any damage sustained by heavy weather on the passage, the underwriter would be liable.

Any writing in the policy takes the precedent of the printed part to which it is opposed and sometimes printed clauses in red are introduced in the policy to nullify certain printed conditions in the body of the policy. For example, the risk of capture and other warlike measures, are named as perils

insured against, but a side clause, when inserted in the policy, exonerates the insurer from liability from such losses, risks of war and all losses incidental to war, and when by reason of the actual existence of war the merchant deems it necessary to have that risk covered, when agreed upon with the underwriter the exonerating clause is waived, thus restoring the policy to its normal condition and covering the war risks. When that risk is assumed by the underwriter, a large premium is added to the ordinary marine premium. The risk of war is deemed greater than all the other perils enumerated in the policy, thus showing that the winds and waves and the raging of the sea do not equal the destructive tendencies of man when his frenzy is aroused. During our Civil War one insurance company paid nearly \$2,000,000 in losses for war risks, and the Confederate cruisers destroyed by burning at sea 18 ships, 7 barks, 4 schooners, 1 brig, and 1 steamer—31 vessels in all, and about the closing of the war one of the same cruisers proceeded to the Arctic Ocean and destroyed 15 whalers. It is estimated that the amount of property destroyed on the high seas by Confederate cruisers aggregated over \$20,000,000.

The printed form of policy insuring vessel, freight, cargo, or profits is essentially the same. It differs only as it is adapted to apply to the character of the respective interests insured. There is, however, a special name given to each policy, corresponding with the risk it is designed to cover. For example, the policy insuring a risk for a single voyage, as from New York to Liverpool, is called a voyage policy.

A time policy insures a vessel for a specified time, usually for one year. In Great Britain, no insurance can be legally made for a longer period than one year at a time. No such legal enactment prevails in the United States.

A valued policy is one giving a definite value to the property insured.

An open policy is one where the value is left open to be determined when ascertained upon receiving the shipping documents. A floating policy covers by vessel or vessels, either sailing or steam, and insures the goods as soon as shipped. Details of each shipment, when received by the consignee, are reported to the insurer and premium is charged thereon. This latter class of policy is rendered necessary in the business of importers, who frequently order their goods several months in advance of the time of shipment, and they are not usually advised of the shipments until the goods arrive.

A wager policy is one that shows on the face of it that the assured has no interest in the property. This class of insurance, that is, one without interest, has been quite common in England, but during the reign of George III, under Statute 19, insurance without interest was declared illegal, but such insurances are still made on the basis of what is termed honor transactions! In the United States it would be difficult, indeed, to recover in any of the courts under a policy where the principals had no interest in the property insured. It is to be observed that an interest in the property is an indispensable condition of all modern insurance.

As touching the duration of the various classes of risks, the policy reads: "Beginning the adventure upon said goods and merchandises from and immediately following the loading thereof on board of the said vessel." The goods thus insured are covered from the time that they are loaded on the vessel, but, in some cases, the ships are not lying at the wharf and therefore the goods so insured are transported in lighters to the vessel. In such cases the risk of lighterage is included. As to the termination, it says: "And so shall continue and endure until the said goods and merchandises shall be safely landed at the destination," so that, if the goods are lightered from the vessel to the shore, that part of the risk would also

be covered. The risk of lighterage is by no means an immaterial one. Losses on lighters are not infrequent. The great advance made in the construction of ships as well as the improved condition in navigating them has materially minimized maritime risks, but one dreaded cause of disasters on the ocean is that of collision.

The construction of large steamships, commonly known as "greyhounds," has added immensely to the attractions and speed of modern travel. We can hardly realize the progress made in naval architecture nor can the advance in the science of navigation be fully estimated. Not unlike everything else in modern life, we have obtained these at the cost of increased danger. The experienced navigator may be serene in a terrific storm, when the violence of the wind and the waves may appall the affrighted landsman, for the sailor knows his ship and has faith in her power to overcome all. When, however, he is beset by fog, there is no escape but to pass through it, and in doing so he knows not what he will encounter. His experience and skill are of no avail in this emergency. He may carefully observe all the rules and requirements of maritime law, as well as those enjoined by experience, but the mistakes and omissions of others he cannot foresee. He is plunging in the dark, and how frequently it has happened that, when thus enveloped in apparent darkness, dire disaster has been the consequence, through the faults of others, when he himself has made all the sacrifices within human power to prevent the possibility of such a fatal result. Collisions at sea are therefore regarded as one of the great perils of modern navigation. It was not until within the past half century that the question assumed a legal form as to the liability of a ship-owner for damage inflicted on other ships or vessels through collision. Rules of the road have been clearly defined and the requirements in cases of fog have been very carefully

outlined, but it can readily be seen that the consequences of disaster to a valuable ship would result in immense loss to the shipowner, whose vessel had sunk another. Therefore legislation has come in to his assistance, and in Great Britain the following statutory law has been enacted:

"Where any loss or damage is caused to any other vessel or to any goods, merchandise or other thing whatsoever on board any other vessel, by reason of the improper navigation of a ship in respect of loss of or damage to vessel, goods, merchandise, or other things, whether there be in addition loss of life or personal injury or not, an aggregate amount not exceeding £8—for each ton of their ship's tonnage, £7—addition for loss of life or personal injury. The tonnage of a ship shall be her gross tonnage, without deduction on account of engine-room, and the tonnage of a sailing vessel shall be her registered tonnage." (Merchants' Shipping Act, 1894.)

The law of the United States on the same subject reads as follows:

"The liability of the owner of any vessel for any embezzlement, loss or destruction by any person of any property, goods or merchandise shipped or put on board of such vessel, or for any loss, damage or injury by collision, or for any act, matter or thing, loss, damage or forfeiture done, occasioned or incurred without the privy or knowledge of such owner or owners, shall in no case exceed the amount or value of the interest of such owner in such vessel, and her freight, then pending." (Revised Statute 4283, Bureau of Navigations, 1903.)

It will be noticed that in the English law the liability is defined according to the size of the vessel, that is, her tonnage, while in the United States it is her entire value, which is to be determined when the legal proceedings have resulted as to the liability of the owner for the loss. The ordinary form of

policy does not cover liability of the owner for damage inflicted to other vessels by collision, through the fault of his vessel. In order to protect himself, special insurance is made, which in some cases have been coupled with the policy insuring the vessel against ordinary risks. In most cases such insurances cover only three-fourths of the owner's liability for loss, leaving him to assume one-fourth of it, so that he will exercise diligence and care in the selection of competent and suitable navigators for his vessel.

It will be noticed that the foregoing relates to the damage inflicted on the other vessel. The damages received by the insured vessel comes under the liability of the underwriter on that vessel. When it is legally determined which of the colliding vessels is at fault, the liability for loss will fall upon the one found to be at fault. By the rules of law administered at the Court of Admiralty, when both vessels are to blame, even though not in equal degrees, the whole loss sustained by their owners is apportioned equally between the two. Each party becomes liable to pay to the other one-half of the damage which he has sustained.*

Next to collision and probably the greatest menace to ocean navigation is fire. This peril is so subtle and difficult to overcome that it assumes an appalling character. It is not only the direct cause of heavy marine losses, but is frequently attended with serious loss of human life. In recent years means have been employed through skillful inventions to locate fire in the hold of a vessel and to smother it, but these means have not always proved effective.

An insurance made free of general and particular average reduces the liability under the policy to total loss only, but there are various conditions in which the property may not be absolutely lost and yet be regarded a total loss under the

* Carver on "Carriage by Sea."

policy. There might be what is technically termed "Constructive Total Loss." An actual total loss is when the property insured is actually lost or destroyed by the perils insured against. Constructive total loss may arise when, by any of the perils named in the policy, the voyage cannot be performed or the property is so damaged as to be of little value, or the expense to forward it to destination would be equal to or exceed the value of the property, necessitating its sale at an intermediate port. In such a case the assured can claim a total loss under his policy. The same principle applies to insurances on the hulls of vessels. If an insured vessel is seriously damaged through perils insured against and the cost of repairing her exceeds her value, the assured may abandon her to the underwriter and claim as for a total loss under his policy.

Insurance on a vessel for a voyage only commences after it is made, the vessel being then in port, either loading or ready to load, and terminates twenty-four hours after her arrival at the port of destination and being moored therein in good safety. Insurance on freight (this interest represents the earnings of the vessel for carrying the cargo) begins at the port of loading and runs simultaneously with the insurance on the cargo so laden, that is, until actually discharged from the vessel.

Charter is an agreement to hire the vessel, either to load at the port where she is, or to proceed to another port to take in a cargo for the ultimate destination. Insurance on such an interest covers from the time the same is made binding, even though the vessel has to proceed to another port to load the cargo, and terminates upon the discharge of the cargo.

Reference has been made to profits as an insurable interest. This may occur under the following conditions: If a merchant should purchase certain articles of merchandise which have not

arrived at destination, and there be an advance in the market so that he has a profit in the goods, he has an insurable interest in such profit, and may insure it, even though the property itself was originally insured by the seller. An insurance thus made would represent an insurable interest, even though a subsequent change in the market might have resulted in there being no profit in the goods on their arrival.

We will now refer to the methods of settlement of losses. As respects total losses, the method is simple. It requires the ordinary proof, such, for example, as the protest of the Master. Immediately after the loss of the ship, it is the duty of the Master to repair to the office of the United States Consul, if at a foreign port, and if in a port of the United States to a notary public, and he, together with a part of his crew, sets forth the circumstances under which the vessel was lost, and protests against the perils which resulted in the loss. This document is called a protest. The circumstances, as recorded in the log book of the ship, are noted in the protest under oath or affirmation, and the Consul then furnishes the Master with an authenticated copy. This is termed "Proof of Loss." If the insurance be on the ship, the proof of interest would consist of the register of the vessel recorded in the Custom House, naming the owner and the extent of his interest in the ship. If the insurance be on the freight, a manifest of the vessel, setting forth the cargo laden and the freight thereon, or, if a charter, the charter party, giving the interest. As respects insurance on cargo, to distant ports, underwriters have, as a rule, representatives at most of the maritime ports of the world whose agency is called into requisition in case of damage to cargo. The agent agrees on a compromise, or, if that cannot be reached, a sale at auction may be resorted to. The agent then gives the consignee an appraisement, detailing the nature of the settlement, with a

certificate of the market value of the goods. If the sale at auction be made, the sum realized on the goods, deducted from the market value, represents the loss sustained by the merchant. The percentage of loss thus determined is applied to the sum insured. An example of such an adjustment is herewith presented :

100 bbls. flour, insured for and valued at \$5.00 per barrel.....	\$500.00	
Flour being insured subject to 5% particular average, necessary for a claim, \$25.00.		_____
Sound value at port of destination, \$7.00 per barrel.....	\$700.00	
Being damaged, sold for, say \$3.50 per barrel	350.00	

Deterioration, 50 %	\$350.00	

Insured value, \$500.00, at 50 % loss		\$250.00
Add extra charges:		
Auctioneer's commission, 2½ %	\$ 8.75	
Surveyor's fee	5.00	
Advertising	1.25	15.00

Loss		\$265.00

It will thus be noticed that the underwriter pays the percentage of loss ascertained as above, applied to the amount on which he has received premium, and, while the percentage is ascertained on a higher basis than the sum insured, yet it must be borne in mind that freight has been paid on the flour from the port of importation, likewise duties, and other incidental expenses, in placing the goods where a higher market of necessity prevailed.

As respects particular average on the hulls of vessels: Should an insurance be made of \$10,000 on a wooden ship valued at \$50,000, the vessel being what is termed, "subject to 5 per cent. particular average," which means that the underwriter will be liable for loss if amounting to 5 per cent. on the entire value of the vessel, that percentage is ascertained

after deducting one-third new for old; that is, the repairs being made upon the vessel, the underwriter pays only two-thirds of the cost, and the adjustment would be as follows:

\$10,000 insured, valued at \$50,000; required, necessary for a claim, \$2,500.

REPAIRS.	PARTICULAR AVERAGE. Net.
To Hull	\$3,000.00
Rigging and sails.....	800.00
Masts and spars.....	1,200.00
	<hr/>
	\$5,000.00
Cr. for old materials.....	500.00
	<hr/>
	\$4,500.00
Off, $\frac{1}{2}$ new for old	1,500.00
	<hr/>
	\$3,000.00
Protest and surveys	50.00
	<hr/>
Particular Average.....	\$3,050.00

Policy for \$10,000 as above will pay, \$610.

Ships are now mostly built of iron or steel, and when repairs are made upon vessels so constructed no deduction of one-third new for old is made unless the vessel be very old.

In most of the American policies provision is made for the payment of loss thirty days after presentation of proofs of loss. Time is thus given to the underwriters to have an opportunity to examine the papers and make the necessary adjustment of the loss, but, as a rule, these payments are made much sooner than the time indicated. Cases are not infrequent where an assured presents his papers, and, the loss being a simple one, as stated in case of a total loss, in the course of two or three hours the adjustment is made and the loss paid that day.

We cannot deal with marine insurance without alluding to Lloyds as representing the most important part of maritime indemnity. While in itself not an organization to insure

marine ventures, the name at once suggests a system of individual underwriting, which has also exerted a wide influence upon all maritime matters. It has its ramifications throughout the commercial world. It may be interesting to trace the connection as respects the name with the practice of marine insurance. Mr. Edward Lloyd kept a coffee-house in Tower Street, London, about the year 1688. His house was frequented by shipowners and others interested in shipping, where, while furnishing them with the newly discovered beverage, as a further attraction he provided such fragmentary maritime news as was accessible. In 1696 he became the publisher of what was then known as *Lloyd's News*, enlarging the scope of information on topics interesting to his patrons, but the paper came to a premature end after seventy-six numbers were issued, on account of an objectionable reference made to the government. In 1726 the paper was revived under the name of *Lloyd's List*, and has continued an important publication to this date. This is a brief epitome of the history of Lloyds, a system extensive in its operations, made up of individuals, each man acting for himself, and having no solidarity.

Underwriting at Lloyds is practiced to a large extent by the individual underwriters. The first incorporated companies chartered in England were two—the Royal Exchange, and London Assurance. These companies were chartered by an Act of Parliament in June, 1720. For the charter of these companies the sum of £600,000 was paid to the government and the companies were given a monopoly of marine insurance. Subsequently this monopoly was revoked and many other companies have since been organized, and London has now more incorporated underwriting organizations than any other commercial centre.

In the United States marine underwriting organizations, chartered by the various states, have not prospered as a rule.

It may be difficult, indeed, to trace the cause of failure in their operations. In the State of New York, alone, over thirty companies chartered during the past century came to a premature end; and the same lack of success appears to have characterized organizations in other states. At the present time there are only three important American companies practicing marine underwriting respectively in New York, Philadelphia and Boston. The oldest was chartered by the Commonwealth of Pennsylvania in 1792, and the one in New York was chartered in 1842. During the existence of the latter it has insured property for \$19,756,685,175. Marine insurance on inland waters is practiced on a somewhat narrower basis than on the ocean, many of the minor details of the practice differ, but the general principles are essentially the same.

In the preparation of this lecture, the object has been to present the most salient features of marine insurance and to define clearly some of the technical terms employed in the practice. To deal with the subject exhaustively, would require a number of lectures. It will probably impress even a novice that the subject has been presented in a most cursory manner. This has been deemed necessary to quicken the interest and encourage investigation on a broader and in a more recondite form of study. If the object of the lecturer has been attained in this respect, he will feel amply compensated for the labor bestowed in the preparation while engaged in pressing duties in his profession.

ACCIDENT INSURANCE

BY SYLVESTER C. DUNHAM

Indemnity against pecuniary loss from disabling accidents to the person is one of the more recent divisions of the general subject of insurance. It was first practiced in England under a charter granted to the Railway Passengers Insurance Company of London in 1849. Manifestly it was suggested by the hazards of railway travel, for railways at that time being new, a journey by that means of conveyance was regarded as a perilous adventure. Designed, like other forms of insurance, to provide indemnity for losses, it embraced the essential elements of life insurance and of insurance against pecuniary loss, and the original principles, adopted at its foundation, prevail to-day.

A policy of insurance is a contract of indemnity, and insurance is an instrumentality by which those who use it share their losses and misfortunes. In the primitive community, consisting of a few families, such as we may still observe in frontier settlements, if the head of the family dies, his neighbors provide for his family by such voluntary contributions as each is able to make. If the house of one of the settlers burns, his neighbors come together and rebuild it. In the more complex and highly organized community like relief is afforded by contracts of insurance, and the insurance company is the agency through which contributions are made and relief distributed. The advantages of such organizations as insurance companies for the equitable sharing of losses and misfortunes among those disposed to contribute seem to have

been recognized as the advances of civilization from time to time produced insurable property and interests subject to various hazards and losses.

The maritime commerce of the Orient became so large that according to Suetonius, Claudius contrived marine insurance or the insurance of ships in the year 43. Commercial or contractual insurance was in use in Italy in 1194. The records disclose no earlier date. In England the records are also obscure, but they indicate the first commercial insurance in England in about 1560. The first law relating to insurance was enacted by the Parliament of Great Britain in 1601, at which time the insurance of vessels seems to have become so common as to require its regulation by statute. Insurance against fire apparently originated in England, because in the warmer climates of Southern Europe, buildings were not so much exposed to destruction by fire and the necessity for protection against loss was less imminent.

As has been pointed out with reference to accident insurance, fire insurance also was suggested by a new and theretofore unlooked for peril, viz.: by the great London fire of 1666. The year following this calamity, London householders, by means of voluntary mutual societies and associations, more or less informal, undertook to protect themselves against loss by fire, but an incorporated fire insurance company did not appear in the field until thirty years later, when in 1696 a charter was procured for the Hand-in-Hand Company, which still continues in business in London.

Life insurance as an organized interest came into existence more gradually and is the product of a more advanced civilization than any form of insurance against the loss of mere property. Life insurance in its best sense is the means whereby the head of the family makes provision for those dependent upon him. It involves a degree of self-denial, of

thoughtfulness for the welfare of others, and a sense of obligation to one's family and to society not manifested in any form of property insurance.

As has been indicated, accident insurance involves the elements of life insurance and of insurance against pecuniary loss. A contract of accident insurance provides for the family of the holder a definite sum from \$1,000 to \$50,000 depending upon the ability of the insured to pay the premium, and upon other considerations of importance to the company issuing the contract, in case of death from personal injuries, accidentally suffered. This feature of the contract is, therefore, a limited form of life insurance. The contract further provides for the payment of a stated indemnity per week during a term not more than two hundred weeks, while the insured may be disabled by accidental personal injuries. This is essentially property insurance, since the policy-holder is indemnified to an extent not exceeding the money value of his time against pecuniary loss by reason of his inability to work at his trade, occupation or profession.

The third important feature of a contract of accident insurance is compensation for dismemberment. If, in consequence of an accident, the policy-holder loses both hands, both feet, or one hand and one foot, or the sight of both eyes, he is paid the full principal sum of the insurance; that is to say, the sum payable in case of accidental death. If he loses one hand or one foot, he is paid one-half the principal sum; if he loses the sight of one eye, one-fifth the principal sum is paid for that misfortune.

Specific sums are also paid under recent insurance policies for surgical operations made necessary by accidental injuries.

To entitle the insured or his family to the indemnity provided in the contract, death or disability must be the result as set forth in the policy of "bodily injuries effected directly

and independently of all other causes, through external, violent and accidental means." Formerly it was the practice of accident insurance companies to define by specific restrictions and limitations the application of the phrase "external, violent and accidental means" by excluding from the insurance injuries suffered through the misconduct or the wanton carelessness of the insured.

For many years the standard accident insurance policy contained this long and somewhat complicated provision:

"This insurance shall not cover disappearance, or suicide sane or insane, or injuries of which there is no visible mark on the body (the body itself in case of death not to be deemed such mark), nor shall it cover accident, injury, death, loss of limb or sight, or disability, resulting wholly or partly, directly or indirectly, from intoxication or while intoxicated, from or while violating law, or from disease in any form, or from bites or stings of insects, or from medical or surgical treatment (except amputations necessitated solely by injuries, and made within ninety days after accident), or from fits, vertigo, or sleep-walking. Nor shall this insurance cover accident, injury, death, loss of limb or sight, or disability resulting directly or indirectly, wholly or partly, from fighting, self-inflicted injuries, war or riot, from voluntary overexertion, or from voluntary exposure to unnecessary danger. Nor (except as incident to the occupation of railway employees insured as such) shall this insurance cover accident, injuries, death, loss of limb or sight, or disability, resulting directly or indirectly from entering or trying to enter or leave a moving conveyance using steam as a motive power (except cable and electric street cars), or happening while being in any part thereof not provided for occupation by passengers, or while being on a railway bridge or roadbed."

This condition has recently been omitted from policies intended for the insurance of selected risks classified by employment as "preferred." Instead of incorporating into the contract a provision excluding injuries sustained in consequence of the gross carelessness or misconduct of the insured, the companies have found that an equal degree of protection is afforded by making sure that the policy-holder is a man not likely to expose himself to danger by misconduct or recklessness, and it is easier for the agent to sell such a policy, because many men object to becoming a party to a contract which assumes the possibility of intoxication, violating law, voluntary exposure, riot, disappearance or suicide.

In favor of this change it is to be said that the experience of two years shows that better results are to be obtained from the more critical examination and selection of risks than from the exclusion of injuries sustained under the circumstances stated.

It is intended by all accident insurance to provide indemnity for the hazards of daily life to which all sober and responsible men are exposed in the pursuit of their avocations at home and abroad. Such losses are paid cheerfully by the company in the exercise of its office of receiving the premiums paid by the insured for protection and distributing to those who may sustain injuries the sums to which they are justly entitled.

That accident insurance occupies a field in which the necessity for such protection exists is shown by the fact that disabling injuries are sustained under about one accident policy of every eight and one-half issued. One accident insurance company in America issued from the time of its incorporation in 1863 to January 1, 1904, over three and one-half millions of policies of accident insurance. The number of claims paid to injured persons, or to their families in

cases of fatal results during these years was over 414,000, and to these beneficiaries was distributed more than thirty-one millions of dollars. Its usefulness is further indicated by the fact that in many, perhaps most cases, the policyholder was dependent upon his salary or his wages for the support of his family and the insurance money provided for a genuine emergency. In 1903 about \$11,000,000 were paid in premiums for accident insurance to the twenty-two companies now engaged in the business in America.

In all classes of insurance, an adequate premium must be paid for the protection furnished. The least hazardous occupations are naturally charged with the lowest premiums. Long experience in the insurance of "all sorts and conditions of men" has enabled accident underwriters to place every insurable employment in one of eight general classes, designated as Preferred, Extra Preferred, Ordinary, Medium, Special, Hazardous, Engineers, Extra Hazardous, Special Hazardous.

The first of these classes includes professional men, merchants, and others whose employments expose them to no peculiar hazards. For these the premium for one year is \$5.00 for the insurance of \$1,000 in case of death, and \$5.00 weekly indemnity in case of disabling injuries, while men classified as special hazardous must pay \$25.00 for an equal amount of insurance. Employees in powder mills are in the latter class, and the companies prefer not to insure them, even at the high premium the hazard of their employment commands. Other men in the hazardous classes are railway employees, especially on freight trains; lumbermen working in the forests and saw mills, miners, and operatives in steel and iron works. The manual of employments and rates therefor embraces more than 2,000 separate professions, trades and occupations, each assigned to the class in which

it is shown by experience to belong. Some employments are so perilous to human life that they are not regarded as insurable, and, if rates are made for them at all, they are made so high as to practically exclude them altogether. In this class are submarine divers, acrobats and aeronauts; professional polo and baseball players; and riders and drivers in races, including bicycle and automobile races.

In computing the hazards of occupation, experience shows some curious and unexpected results; for example, dentists, although their employment apparently exposes them to little danger, cannot be insured as preferred risks, because slight injuries disable them from the practice of their profession. A dentist must have sound fingers to do the delicate work of his craft and a cut or a sprain which, to a lawyer or a merchant would be only a slight inconvenience, is, to a dentist, total disability, and, in calculating its premiums the insurance company must classify these gentlemen accordingly. Surgeons also are not in the preferred class, on account of exposure to septic poisoning, which often aggravates a slight injury and produces a long period of disability. When a man reaches the age of about fifty or fifty-five years, his classification and premium must be advanced because his recovery from disabling injuries is slow and he suffers a longer period of disability than a young man would suffer from like injuries, and when a man reaches the age of seventy he is not considered insurable.

Indemnity against loss of time cannot be included in accident insurance in favor of non-producers, because their time has no pecuniary value. Gentlemen of leisure and most women are, therefore, insurable only for fatal injuries; but an exception is made in favor of women in productive occupations, such as teachers, stenographers, and sometimes actresses, although the latter are not looked upon with favor by the

accident underwriter, in his professional capacity. Neither can accident insurance be written upon men whose sight or hearing is impaired or who have not the use of their limbs. It is obvious that such persons are much more exposed to danger than the man in full possession of his physical powers. A careful selection of risks must be exercised among the classes regarded as insurable, and, before a policy can be written with safety, the company must be assured that the applicant is a man of proper age, is engaged in a productive employment that pays him better than the compensation promised by his policy in case of enforced idleness, and that he is mentally, morally and physically sound.

The moral hazard enters largely into the calculations of the accident insurance man. Policies cannot be written in favor of men who are habitually intemperate, who are immoral, whose habits of life are reckless, or who are financially irresponsible. Such men foolishly or purposely expose themselves to danger and sustain injuries while intoxicated or while visiting disreputable places, or while wantonly doing juvenile "stunts" to display their physical courage; while the man who is bankrupt in morals and estate often inflicts injuries upon himself in order that he may claim indemnity upon his insurance policy, and not infrequently takes insurance with that purpose in view. A surprising number of cases have occurred in which policies have been taken out for the express purpose of defrauding the insurance company writing them. In his very interesting work "Stratagems and Conspiracies to Defraud Insurance Companies," Dr. John B. Lewis, the veteran Medical Director of The Travelers Insurance Company, has reviewed no less than one hundred cases in which the fact is unquestionable.

In several of these the insured was murdered by his fellow conspirators for the purpose of obtaining the insurance. Many

have become celebrated cases in the criminal annals of the country, including the case of William E. Udderzook, who murdered William S. Goss, upon whose life an accident insurance policy was taken in The Travelers Insurance Company, and whose part in the conspiracy was to disappear until fabricated evidence could be offered of his death by accident and \$5,000 collected from the company. The evidence consisted of a body of a man, procured for the purpose, placed in a building in Baltimore and the building destroyed by fire, the expectation of the conspirators being that it would be mutilated beyond identification. It was offered and generally accepted as the body of Goss, and the evidence of accidental death in a burning building was regarded as sufficient. But the company was not convinced and protracted its inquiries until Goss, who was hiding out in the forests of Pennsylvania, became weary and lonesome and very thirsty and threatened to come out of the woods and give up the enterprise. Udderzook murdered him, evidence of which was discovered and offered by the insurance company, and Udderzook was prosecuted for his crime and after a long and most dramatic trial was convicted and was executed in Chester County, Pennsylvania, where the murder was committed, on the 12th day of November, 1874.

A like result was secured by the same company in the well known case of Harry Hayward of Minneapolis, who insured and murdered Catharine Ging, and who was executed on the 11th of December, 1895. And Joseph Brown, who insured and murdered Angie Stewart, was exposed and prosecuted through the same agency, and executed at Hudson, N. Y., on the 30th of May, 1869.

In numerous cases the insured has taken his own life in order that the insurance might be paid to his family, and in numerous others self-mutilations have been inflicted for the

purpose of securing indemnity. The extent of self-mutilation may be illustrated by reference to the fact that in the early eighties the accident companies began to give a specific sum for loss of limbs. For many years the leading accident company in America paid the same indemnity for the loss of either hand. Observation of its experience for sixteen years showed that in ninety-two cases the right hand was lost, for which the indemnity paid was \$48,511. In one hundred and twelve cases the left hand was lost, for which the indemnity amounted to \$88,879. This seemed disproportionate and not to be accounted for except upon the theory that in many cases the insured were selecting the least valuable hand and voluntarily disposing of it to the insurance company for the indemnity agreed upon in the policy. This view was confirmed by the fact that the right hand is most exposed to danger and most likely to be the victim of an accident. To overcome this difficulty, the policy was so changed as to furnish the larger indemnity for the right hand. When it became the more valuable for insurance purposes, the statistics changed, and in two or three years twenty-one right hands were lost at an expense of \$71,000 against two left hands at an expense of \$2,500, and of these cases six accidents to right hands were caused by accidental self-shooting. Inasmuch as these results were still more disproportionate, and inasmuch as it is a peculiar accident for a man to hold his pistol in his left hand and shoot off his right, and making due allowance for the sudden and unanimous conversion of the Sons of Benjamin to the advantages of accident insurance, these statistics were regarded as most significant of fraud.

It is difficult to detect fraud in such cases as these. The man who kills himself or another, or who inflicts injuries upon himself for the purpose of defrauding an insurance com-

pany, lays his plans with great ingenuity, and there is rarely in the act itself or in the circumstances to which a court will give attention, sufficient evidence to enable the company to escape payment. There is reason to believe that many cases, in which the right hand was lost, to which reference has been made, were intentional acts and therefore fraudulent.

Probable frauds include also a number of cases in which injuries were sustained by passengers on public conveyances. It is provided in many accident policies that, if the insured is injured while traveling as a passenger upon a public conveyance, the sum to be paid by the insurance company shall be double that payable under ordinary circumstances. This element was introduced into the policy to furnish additional insurance to travelers, without giving them the trouble to purchase railway insurance tickets whenever about to go on a journey, and it is a very popular and convenient feature of the contract. But under this provision a surprising number of cases have occurred in which men carrying accident insurance have accidentally shot or otherwise injured themselves upon cars or steamboats. One case may serve to illustrate this class:

John Blank of Brooklyn, N. Y., the holder of such a policy, borrowed a shot gun from one of his neighbors and a dog from another and went out for a day's sport in New Jersey. He came home with an empty bag, but his disappointment was not enough to account for the facts that before leaving the field he neglected to remove the cartridges from his gun, and, while on the ferry boat crossing the Hudson River, he rested the muzzle of his gun on his ankle, and, by some means he was unable to explain, discharged it, shooting away his foot. That let him in for twice what he would have received if he had shot off the same member while he was over in Jersey, because the accident occurred while he was

riding as a passenger upon a public conveyance. The company settled because the evidence of fraud was insufficient to justify resistance in court, and charged up the loss to the account of Moral Hazard, which is a considerable account in all insurance offices. It was found that the man's business was not successful, that he was a bankrupt, that he was implicated in transactions which exposed him to arrest and imprisonment, and that he had recently taken a large amount of accident insurance in several companies, so that all the circumstances pointed to a design to defraud, but these circumstances were not of themselves sufficient grounds for a defense on the part of the insurance companies in the absence of some evidence that the injuries were not accidentally sustained.

Like circumstances of bankruptcy, financial and moral disgrace, and an undue amount of insurance are to be found in nearly every case in which there is reason to suspect self-inflicted injuries, fatal or otherwise. Many such cases, accumulated in many years of experience, indicate the wisdom of careful selection.

One of the most useful officials of an accident insurance company is the adjuster of claims. He must be a man of exceptional tact and wisdom and a shrewd observer of human nature. The great majority of claims he settles without difficulty or question, because the claimants are responsible men and expect only what they are entitled to receive under the contract. If the injuries result fatally or in the loss of members, the contract contains a specific statement of the sum to be paid. The principal sum, say \$5,000 or \$10,000, is paid in full for the loss of life, and the same sum for the loss of both hands or the loss of both feet, or of one hand and one foot, or of the sight of both eyes. One-half of this sum is paid for the loss of either hand; one-half for the loss

of either foot, and one-fifth for the loss of the sight of either eye. Assuming that the claimant is an honest man, as ninety-nine out of one hundred are, the work of the adjuster in such cases is simple. But, when fraud is suspected, he employs his ingenuity in finding evidence for a complete defense by the company against the demand, and, if the evidence is insufficient, in making the most favorable settlement he can. Not infrequently cases are contested where the adjuster and the attorneys do not feel certain of the sufficiency of the evidence, but they feel bound to make the contest as a matter of principle. These cases are extremely rare, but are contested not only for the protection of the treasury of the company, but as an obligation due all honest men, and especially honest insurers, who pay premiums for the insurance of honest associates and are entitled to have no others insured in the same company.

To contest claims under insurance policies is unpopular and requires courage, but, when evidence of crime or fraud is unmistakable, it is a duty not to be evaded. This course consistently followed has given fair warning to impostors and conspirators that they will be relentlessly pursued if they attempt fraud upon certain companies. The result is that the number of fraudulent claims is far less now than thirty, twenty or even ten years ago. The item of claims resisted now amounts to an insignificant fraction of one per cent. of the claims admitted and paid.

Much of the time and energies of the adjuster are employed in settling with claimants the duration of disability. Indemnity is payable only while the insured is totally disabled from performing the duties of his occupation. Room is sometimes found for a difference of opinion as to the term of disability, but differences most frequently arise upon what seems to be a disposition to protract idleness after practical recovery. The most exasperating of these cases have been those of men in

easy circumstances and of comparative leisure, whose incomes continue the same sick or well. So many of these have occurred that the companies have found it does not pay to insure indemnity for disabling injuries to gentlemen of leisure, and agents are instructed to solicit them for insurance in case of fatal injuries only, for which one-half the premium is paid.

In the settlement of disability claims, or claims for loss of time, a policy of liberality has been found best, and, although in an occasional case the claimant does not get all he demands, it is the purpose of the company to see that no one receives less than his contract fairly requires. Within the past three years the companies have extended the contract by adding partial indemnity for partial disability following a period of total disability.

One would hardly look for humor in a business that deals with mutilations and sufferings, but the records of an accident company contain, nevertheless, many curiosities, such as the case of the young man who worked in a saw-mill and lost one of his fingers "monkeying with the buzz saw." He soon recovered, received the indemnity payable under his policy, went back to work, and promptly reported the loss of another finger; the explanation being that it was taken off while he was showing a friend how he lost the first one.

A Pennsylvania sheriff, who was conducting an execution, suffered a disturbance of his nerves, and in hastily leaving the platform, fell down the gallows steps and fractured two ribs.

Another gives this account of himself: "was asleep and dreamed that a mad bull was rushing at me, when I kicked at the imaginary animal, striking the wall violently and injured my right great toe."

Another "was standing at the cow stable door, lifted my right foot to touch a cow, and when doing so think my

left foot was placed on the tail of the cow. The cow started and I was thrown and fell, striking violently on my left side."

And these specimens are quoted from various claims:

"Some captive rattlesnakes in a restaurant escaped from the box in which they were kept and so frightened one of the patrons that in his haste to get out he fell down in front of me and in getting up came up underneath me, tossing me over his head."

"While assisting a lady who had an umbrella under her arm aboard a train, the point of the umbrella was accidentally thrust into my left eye."

"Placed electric fan beside my bed on a hot night, and while asleep stuck foot into it."

"Kicked at water bug on floor under sink, struck foot against waterpipe and broke toe."

"Striking right hand against pair of shears in hip pocket while chasing a rooster (at home) to clip his wings."

"Wiping off an electric automobile when gold ring on left hand came in contact with electric current melting the ring and burning finger to the bone."

"Have been around the world three times and never been injured, but was so unfortunate at my home as to step in a bucket some one had left on the cellar stairs and fall down."

"Bitten by a lobster."

"Lacerated thumb while cutting coupons."

Other facts more interesting than curious are found by a classification and comparison of the statistics accumulated in the adjustment and payment of over 400,000 losses; among these are the following:

That the ratio of fatal accidents to the whole number of injuries sustained is 1.29 per cent.; but the sums paid for death claims are 39.12 per cent. of total losses. The average

duration of disability is twenty-two days. The ratio of accidents sustained by people at work in the occupations for which they are insured, is 66.83 per cent. of all accidents for which claims have been made. Leaving out of the accounts the hazards of occupation, accidents have happened under policies without regard to the employment of the insured, in the following ratios:

	Per cent.
Accidents to pedestrians	24.14
At home (indoors)	18.80
Horses and vehicles	18.16
At home (outside)	15.98
Recreation	6.15
Railroad travel	4.77
Bicycle accidents	4.06
Street car travel	2.74
Use of firearms	1.73
Animal bites	1.52
Assaults	1.20
Steamship travel .....	.70
Miscellaneous .....	.05
	<hr/>
	100.00

Significant conclusions from these statistics are that the hazards of railway travel, to provide for which accident insurance was first contrived, have become a very insignificant element in the business. Apparently there is five times greater exposure to danger in walking than in travel by railway. Walking is nine times as dangerous as street car travel. The exposure to life and limb, staying quietly at home, within doors, is more than equal to all the accidents of driving, and the horse has been known as a vain thing for safety from scriptural times down, while quiet home employments about one's grounds are more perilous than railroad travel, street car travel, bicycle adventures and firearms combined.

This comparison may be misleading without the explanation that the greater ratio of injuries in employments presenting little exposure to danger is to be accounted for by the fact that vastly more persons are exposed to danger in the quiet than in the strenuous life. For every hundred persons riding bicycles, traveling by rail and otherwise, driving horses more or less spirited, there may be five thousand at home engaged in quiet indoor and outdoor employments.

The Rise, "Decline and Fall" of the bicycle are graphically illustrated by accident statistics. Apparently the use of that vehicle was at its best in 1896, during which year one company paid to riders,—and to pedestrians whose efforts to dodge were not successful—eight hundred and twelve claims, amounting to \$44,574.21. Since that year, to and including 1903, like claims have been paid as follows:

Year.	Claims.	Amount.
1896.....	812	\$44,574.21
1897.....	557	27,621.43
1898.....	508	28,463.98
1899.....	432	18,723.69
1900.....	359	14,007.73
1901.....	264	10,089.08
1902.....	199	8,619.15
1903.....	98	3,970.24

Showing a decline in eight years in the destructiveness, if not in the usefulness, of the bicycle of 91 per cent.

Primarily an accident insurance company has but one source from which it receives income, and that is the policy-holders who pay the premiums. It begins business with a capital invested by stockholders who expect and receive dividends upon their stock if the business proves successful. But after that beginning it must depend upon premiums. The first and greatest demand upon the premium receipts is naturally that

in favor of the policy-holders for the payment of their claims. It is for the purpose of meeting these obligations that the company exists, and all other demands are subordinate to them. In addition to losses, the necessary expenses of conducting the business must be paid, the reserves maintained, and premiums must be calculated and from time to time adjusted to meet these requirements.

The estimated loss ratio is 50 per cent. of the premiums, and premiums are adjusted to that scale. Usually it is somewhat lower, but, when it runs above 50 per cent., the actuary displays a danger signal and something must be done to improve it. It may be that the adjuster is getting too liberal, or a series of disasters may have befallen the public,—witness the Iroquois Theater fire in Chicago; nine persons killed in a railway wreck at Fort Scott, Kansas; sixty-three in another at Laurel Run, Pa.; twenty-two in a head-on collision in Michigan; seventeen near Topeka, Kan.; fifty-eight lost with the steamer Clallam on Puget Sound, and two hundred miners entombed in the Harwick mine near Pittsburg, all within thirty days in December and January last. Or, perhaps, insufficient care has been exercised in the selection and classification of risks. At all events the loss ratio must not long continue above 50 per cent. of gross premium receipts.

The expense next in magnitude is the commissions paid agents for getting the business. Agencies are established from one end of the country to the other and agents are compensated by commissions of from 20 to 35 per cent. upon the premiums they collect. The rate depends upon the class of business secured, and differs also because some companies pay more than others for like classes. The average cost in commissions and other expenses of getting the business through the agencies is not far from 30 per cent. Twenty per cent. of premiums, therefore, remains for home office expenses,

taxes on premiums exacted by every state, the maintenance of the reserve fund, the accumulation of a surplus, and dividends to stockholders.

This brings us in orderly fashion to the consideration of the surplus and reserve funds which must be maintained by every company. The reserve is commonly called the re-insurance reserve, because it is the sum a company must keep on hand securely invested sufficient to purchase re-insurance in some other company of all outstanding policies of insurance, or settle the claims that will become payable thereon as they arise. If this fund falls below the standard fixed by law or by uniform practice, the company is insolvent and a receiver may be placed in charge of its affairs. A reserve must be set aside against the first policy issued, and thereafter reserve funds must be increased as the company extends its business by additional policy obligations sure to result in a certain ratio of losses. All insurance reserves are in the nature of sinking funds accumulated and maintained in sums sufficient to meet obligations that have been contracted and that will some time mature for payment. The unearned portion of premiums received upon policies outstanding and in force, is the rule for reserves against accident insurance and it is applied in the following manner:

The term for which most policies are written is one year, and as many policies are issued every day and premiums paid in advance, the outstanding policies have everywhere from one day to one year to run. The mean time for the expiration of all is, therefore, six months. But the company having been paid for twelve months' insurance upon each policy, one-half the premiums in hand for outstanding insurance at any time pays for the time the insurance has been in force, and the other half is held to pay for the unexpired insurance, and is therefore regarded as unearned. Claims

upon the unexpired contracts may be expected in the normal ratio which, as has been shown, equals 50 per cent. of the gross premiums, and expenses may always be depended upon.

The unearned premiums are, therefore, reserved as a sinking fund to meet expected losses, or to purchase re-insurance in another company in case the company should desire to liquidate and withdraw from business.

The rule was expressed by statute in Connecticut in 1903 in these terms:

"Every insurance company incorporated under the laws of this or any other state of the United States, or under the laws of any foreign country, which in this State insures persons against bodily injury or death by accident, shall maintain a premium reserve on all such policies in force, whether issued in this State or elsewhere, equal to the unearned portion of the gross premiums charged for covering the risks."

A like law was enacted in New York the same year. Both laws simply stated in authoritative form the practice of reputable companies and the rules adopted and enforced by the insurance officials of the several states.

It is the policy of every conservative company to accumulate a handsome surplus fund in addition to the reserve fund required by law. Such a fund is available to meet any deficiency that may appear in the reserve by reason of a decline in the market value of the securities in which the resources of the company are invested, or any impairment that may result from heavy losses incurred in some great calamity or series of calamities in which many lives are lost and many more victims are disabled. A liberal surplus and reputation for fair dealing do more to win the confidence and patronage of the public than all other arguments combined.

In order that the public may be informed of the financial condition of insurance companies and be protected against

any that may be insolvent or otherwise irresponsible, every state has a department of insurance in charge of a commissioner or superintendent, whose duty it is to require every company having agencies in his state to file an annual statement of its affairs. He may also at any time visit the home office of any company and examine its accounts and securities.

Formerly this privilege was much abused by the commissioners of certain western states, who regarded it as an opportunity to spend a vacation east with expenses paid by the victim and liberal fees besides. But it was overworked until some of the companies protested, exposed certain scandalous particulars, and there are hopeful signs that the road agent insurance superintendent is an incident of the past. It is the duty of the superintendent of the state in which the company is located to examine its affairs at least once in four years, and his reports are accepted by the officials of other states. In recent years most insurance officials have been gentlemen of high character and, in the conscientious discharge of their duties, have contributed much to the cause of sound insurance.

Any discussion of the subject of Accident Insurance is incomplete that does not mention the name of James G. Batterson, scholar, publicist, philosopher and builder of great enterprises. While traveling in England in 1863, accident insurance tickets, covering the hazards of railway travel, did not escape his keen observation. When he returned to Hartford he organized a company for the transaction of like business, which under his care developed during his lifetime into a strong, enduring and useful institution, possessed of resources of more than thirty-three millions of dollars. Under Mr. Batterson's guidance, although many other important interests demanded much of his time and energies, the business of accident insurance was developed in America to pro-

portions and to usefulness far exceeding its scale in any other country. Whilst the original idea was suggested by the English experiment, Mr. Batterson is recognized the world over as the founder of Accident Insurance, and for this and for his achievements in letters and the industrial arts, he was in 1870 awarded the honorary degree of Master of Arts by this noble University.

LIABILITY INSURANCE

BY SYLVESTER C. DUNHAM

In primitive times the relation of Master and Servant was a simple one. With the advance of civilization it has become more and more complex. As soon as employers became distinguishable from employés, as classes, combinations of both in one form or another began, and they have ever since continued.

In some trades and for limited periods, the unnatural conflict between capital and labor has been abated by the formation of guilds, in which masters and servants were united as producers, against the community. But monopolies have never been long tolerated by the public, and generally they have themselves limited the period of toleration by an abuse of their prosperity. The decline of such combinations as these has been marked by internal dissensions and the organization of one branch against the other.

The great industrial advance of the last century stimulated and witnessed a greater diversity of interest between employer and workman than can be found, leaving slavery out of the account, in all preceding history. The invention of machinery, the greater use of water power, and the discovery and application of expansive force of steam, condensed into the nineteenth century a material advance equal at least to that of any ten preceding centuries.

To enable capital to enter the inviting fields thus opened, the corporation was enlarged in usefulness and opportunity, the most important change being the enactment in several

countries of general statutes under the provisions of which three or more persons might associate as a corporation by the execution and registration of simple articles of agreement, and limit the liability of each member for the debts of the company to the capital stock contributed by him. Before these laws, charters were conferred only by Royal grant or by special legislation. This timely and wholesome measure was adopted in Connecticut in 1837 and was largely instrumental in placing this little State in a leading position as a manufacturing community. Thrifty and ingenious people and abundant water power did the rest, but to Connecticut belongs the credit of the first limited liability joint stock act. In 1855 a similar law was enacted by the parliament of Great Britain, and soon thereafter like statutes were adopted by other communities, including most of the United States. This measure afforded to the man of means an opportunity to invest moderate amounts in several enterprises under adequate protection against undue losses and liabilities, and offered to promising enterprises an opportunity to obtain adequate capital, and so added a powerful influence to industrial expansion. It also proved to be one of the instruments that widened the breach between capital and labor, of which I will speak later.

The same period covered almost the entire history of legislation for the amelioration of the condition of people employed in factories and workshops. The first statute was enacted in 1802, requiring that apprentices in cotton and woollen factories be instructed in the principles of the Christian religion. From then until 1876, Parliament enacted fifteen statutes, prescribing hours of labor, ages of employment, proper light, ventilation and sanitation of factories, protection against dangerous machinery and poisonous gases and vapors, and many other provisions for the safety of working people and

the improvement of their moral and physical condition, most of which, I regret to say, were adopted only after persistent demand by the labor unions. While these reforms were in progress in England, the legislatures of the American manufacturing and mining states were adopting equally advanced measures for improving the conditions under which working people were employed. In 1878 all this legislation in England was revised and embodied in one complete, consistent and beneficial statute, known as the Factories Act, and in 1880 this was followed by "An Act to Extend and Regulate the Liability of Employers to Make Compensation for Personal Injuries Suffered by Workmen in their Service."

In my remarks last week I pointed out that insurance against loss by fire was found necessary the year after the great London conflagration in 1666, and that accident insurance was first in demand in 1849, when railways were new and dangerous. So in 1880, forthwith after the adoption of the Employers Liability Act, The Employers Liability Assurance Corporation of London was incorporated, and has ever since transacted a large and successful business in England and America. And America was not second to England in enterprise, for the American accident insurance companies entered the same field at the same time and have since far outstripped foreign competition.

It is the office of liability insurance to indemnify the policyholder against the loss he may sustain by reason of demands or actions for damages recoverable by legal proceedings, for injuries to the person suffered through the negligence of the insured. Such insurance is issued not only to manufacturers and other employers for the purpose of indemnifying them against losses to their employes, but to the owners of buildings, to the operators of mines and to contractors for the construction of railways, subways, bridges, buildings and other

works, for like indemnity against the demands of strangers who may be exposed to danger as well as men employed upon the work. Accidents suffered in hotels, theaters and stores, and from the use of elevators, horses and vehicles, and from the navigation of vessels, are also proper and usual subjects for liability insurance.

Some time must, therefore, be devoted to the law under which damages may be recovered for personal injuries suffered through the negligence of others.

The right to recover damages for personal injuries has from the earliest times been recognized by the common law of England, if it could be shown that the injuries were inflicted through the negligence of the defendant. The common law was adopted by statute in many of our earlier states, and where not so adopted our institutions and habits of thought are so similar that little difference is to be found between the English law and ours. Thus the right to such recovery has become firmly established by an unbroken current of decision by the courts of England and America and other civilized countries.

The general rule is subject to these exceptions:

1. If the injury is caused by conduct of the injured person without which the injury would not happen, damages will not be awarded, although the defendant may be guilty of negligence also. This is a brief statement of the doctrine of contributory negligence, which is a complete defense.

2. In some circumstances, if the injured person is a trespasser upon the premises of the defendant, he cannot recover damages. In general it may be said that a less degree of care is required for the protection of trespassers than for the protection of those properly upon the premises. Negligence is a breach of duty, and the duties owed to an actual trespasser are few and slight. The law does not impose upon any one

the duty to anticipate a trespass and guard against possible injury to a wrong doer, but it will not excuse a wilful or wanton injury inflicted upon him.

3. Employés are held to assume all the obvious and necessary hazards of their employment, and, if the injury is one incident to the occupation of the injured person, he cannot recover damages. But it is the duty of the employer to see that the employé is instructed concerning the hazards he assumes, because a man can assume only that which he knows.

4. If an employé is injured in consequence of the carelessness of a fellow servant, his employer is not liable. Although the employer is held responsible for the negligence of his servants committed while engaged in his service and resulting in injuries to strangers, they and not he are accountable for injuries they may inflict one upon another while so engaged.

5. At common law damages are not recoverable for negligently causing death, but long ago and in every state statutes were enacted giving in some cases the heirs and in others the administrator of the deceased a cause of action for the damages the courts could not otherwise award. The earlier of these statutes attempted to maintain consistency with the traditions of the common law, and so enacted that the cause of action arising in favor of the injured person before his death should survive and be prosecuted by his heirs. But in construing these statutes the courts held that unless the injured man lived long enough to experience conscious suffering, no cause of action had ever existed in his favor and none could therefore survive. In cases of instantaneous death the purpose of the acts was thus defeated, and thereupon the legislatures paid more attention to substance and less to form and enacted laws giving a remedy to surviving heirs whether the death were instantaneous or not.

In most states damages cannot be recovered in fatal cases exceeding five thousand dollars. In some, the limit is ten

thousand, and in New York by an amendment to the constitution in 1900 all limits were removed. The defense that death was instantaneous is now and for some years has been practically abrogated, although in three or four states, notably Massachusetts, it still exists, subject to the difficulty of furnishing conclusive evidence of the fact, which is not always easy. In Massachusetts even that defense may be pleaded only when the person whose life was lost was other than an employé of the defendant.

We come now to the consideration of the additional liability to employés imposed upon employers by the English Employers Liability Act of 1880, and by similar—in fact almost identical—statutes enacted in Alabama in 1885, in Massachusetts in 1887, in Colorado in 1893, in Indiana in 1893, and in New York in 1902. The several statutes do not agree in all particulars, but all agree in limiting to but a few cases the defense that the injuries were sustained through the negligence of a fellow servant. This change affected perhaps a majority of cases in which damages were demanded against an employer and was, therefore, radical and far-reaching.

We do not have to look far for the arguments by which the law-makers were influenced. During the great industrial expansion we have noted and the absorption of large interests by corporate proprietors, the personal relation of earlier and simpler times between master and man practically disappeared. This was a necessary incident to the management of great enterprises, particularly railways. The journeyman mechanic no longer took orders from his employer who worked with his men, but orders began to come through a foreman, a yard master or division superintendent, or department boss; always from somewhere "higher up." The men who gave the orders exercised certain authority, but they were not the employers, neither were they fellow servants with the men who did the

work. It was this disappearance of the personal relation between employer and workman and of personal interest by each in the welfare of the other—for human sympathy cannot be one of the attributes of a corporation—that increased during the nineteenth century the estrangement between capital and labor.

It was this disappearance of the personal relation and personal interest that led also to the large and rapid increase in the last forty years of the last century of actions by employes against employers, and particularly corporate employers. During this time it came to be accepted, in capitalistic circles at least, that a corporation need not expect a fair trial before a jury, and the maxim, "Corporations have no souls," was popularly understood to mean that nothing but oppression need be expected from a corporation.

It is most interesting in this connection to note Chief Baron Manwood's observations as early as about 1620, in endeavoring to make clear the legal distinction between an artificial person (i. e., a corporation) and a natural person. Lord Coke, in commenting upon Manwood's opinion, said:

"The opinion of Manwood, Chief Baron, was this, as touching corporations, that they were invisible, immortall, and that they had no soule; and therefore no Subpoena lieth against them, because they have no conscience nor soule; a Corporation is a Body aggregate; none can create soules but God, but the King creates them (corporations), and therefore they have no soules; they cannot speak, nor appear in Person, but by Attorney." (See *Tripling vs. Pexall*, 2 *Bulstrode*, 233.)

In prosecuting actions against corporations, lawyers of reputation have used the much quoted and misquoted phrase "Corporations have no souls," in its perverted sense, for the purpose of arousing prejudice in the minds of the jury.

Many lawyers in large cities became specialists in encouraging and prosecuting claims against employers, including many

in which the injuries were trivial or the claim unfounded. Agents of these practitioners pursued injured men to the hospitals and secured their patronage upon a percentage basis, sometimes before the surgeon had finished his work. So common was, and is, the practice, that these enterprising solicitors are known as "ambulance chasers," and their diligence justifies the designation.

In many cases claims having no merit were settled on some basis by employers rather than suffer the annoyance and expense of a trial. In earlier times and before this spirit of antagonism was fostered, accidents to employés were usually treated in a spirit of liberality by the employer, and in only the most serious cases did it become necessary to inquire concerning the strict legal liability for damages.

The later increase of such litigation caused a material increase in losses and expenses for the claims of injured persons, and the growing apprehensions of employers were fast leading in the direction of some systematic means for protection. The development of liability insurance as the instrumentality for sharing and distributing such losses and expenses was probably only hastened by the later definite course taken by the courts and the legislatures.

In good season the courts began to define the status of the superintendent and the foreman and the superior servant, and long before the passage of the employers liability act in England it had been held in many well reasoned decisions in which the fellow servant defense was offered, that the person by whose negligence the injury was caused was not, although employed by the same master, a fellow servant, but a vice principal, and that the common employer was liable for his negligence and its consequences.

The act accepted in full the vice principal doctrine of the courts and went farther by enacting that the employer should

be responsible for personal injuries sustained by employés, "by reason of the negligence of any person in the service of the employer who has any superintendence intrusted to him," or of any person in his service intrusted with the duty of seeing that ways, works and machinery are in proper condition, or who has charge of railway signals, switches, engines or trains. By these provisions, common in substance to all the acts mentioned, the value of the fellow servant defense has been much impaired in the states where such statutes exist.

Some of the acts contain other provisions imposing other additional liabilities upon the employer, as in Colorado where the defense that the injuries resulted from negligence of a fellow servant is completely abolished, and in New York where the rule concerning the assumption of risks by the employé is greatly abridged.

The like tendency is reflected in a brief but comprehensive statute enacted in 1901 in Connecticut, as follows:

"It shall be the duty of the master to exercise reasonable care to provide for his servant a reasonably safe place in which to work, reasonably safe appliances and instrumentalities for his work, and fit and competent persons as his co-laborers, to exercise reasonable care in the appointment or designation of a vice-principal, and to appoint as such vice-principal a fit and competent person. The default of such vice-principal in the performance of any duty imposed by law on the master shall be the default of the master."

One of the immediate effects of this liberal remedial statute in England was to create a demand for insurance against its consequences, and thereupon The Employers Liability Assurance Corporation was chartered and began a class of business since adopted by employers of other countries where like statutes exist and where they do not. The insurance is desired regardless of statutes. To illustrate its general adop-

tion throughout the United States, it may be remarked that the premiums paid for such insurance in America during the past ten years have amounted to more than sixty-two millions of dollars.

By the most recent, most liberal and more carefully considered policies of liability insurance, the obligation assumed by the insurance company is to—

“Indemnify the assured against loss by reason of the liability imposed by law upon him for damages on account of bodily injuries, including death resulting therefrom, accidentally suffered by any person or persons employed by him, by reason of the operation of the business herein stated, and while within the factories, shops or yards herein described, or upon the ways immediately adjacent thereto, provided for the use of such employés.”

Substantially, the same phraseology is employed with necessary changes for contracts of indemnity against liability for accidents resulting from the construction of buildings, the use of elevators, the use of vehicles, including automobiles, the navigation of vessels, the operation of hotels, theaters and other buildings, including stores and warehouses. Like phraseology is employed in policies designed to protect the insured against damages recoverable by others than employés, described in the terminology of the insurance office as “the public.”

The contract limits the indemnity to be paid by the insurance company to definite sums, usually not exceeding five thousand dollars for injuries to one person, and not exceeding ten, fifteen or twenty thousand dollars for the injuries that may be sustained by several persons in one accident. It is required that the insured give notice to the insurance company forthwith upon the occurrence of an accident, and it then becomes the duty of the insurance company to adjust and

satisfy the claim of the injured person, and if the parties are unable to agree upon the damages that should be paid, to defend the action brought by the injured person against the insured for the recovery of damages and pay the expenses of the litigation and the verdict, if one is recovered.

The premium paid for this service and protection is determined in employers' policies by the wages paid to employés, the premium being a certain percentage upon the annual pay roll. Usually an advance premium is paid upon the estimated expenditure for the year following the date of the policy, and at the expiration of the insurance a complete pay roll account is returned and the premium adjusted thereon, the company sometimes receiving an increased compensation and sometimes returning a portion of the advance premium to the insured.

Occupations are classified according to the danger to which employés are exposed, textile manufacturing commanding as low a rate as any branch of industry, while tunneling, bridge building, structural iron work, wrecking buildings, and submarine operations are classed among the most hazardous employments and command the highest premiums.

These are the elements of a contract of liability insurance.

Liability insurance is a branch of the more general and comprehensive business of accident insurance. It relates to that class of personal injuries for which some one other than the injured person is responsible, and who is legally bound to make compensation for the loss sustained.

Accident insurance furnishes specific indemnity for certain losses. The contract provides a definite sum to be paid to the family or other beneficiaries of the insured in case he loses his life by accident. Like definite sums are payable to the insured for dismemberment, or to indemnify him against pecuniary loss during disability from accidental injuries. All

these benefits and indemnities are exact and specific. In most cases the only question to be settled between the company and the injured person is the duration of total or partial disability. Having agreed upon that, the policy settles clearly the indemnity to be paid.

In liability insurance, on the other hand, the damages recoverable by the injured person from the corporation or person chargeable with liability for such injuries is entirely unascertained and is such a sum as the parties are able to agree upon as fair compensation, or, failing to agree, such sum as a court or jury may award as damages. Usually the views of the parties differ widely, and it is difficult to reach an understanding. Perhaps three-fourths of the cases in which liability exists are settled by agreement, each party conceding more or less from his original position until they succeed in getting together. Neither can do more than estimate what damages would be awarded as the result of a trial. Courts and juries take into account the gravity of the injuries, the term of disability, the possibility of permanent physical impairment and particularly so when limbs are lost, the ability of the injured person to earn money before and after his injuries, and after considering all these things the verdict is as much an estimate as the views of either party, but it has the advantage of being final and authoritative. The pleasantries among lawyers that the court has the last guess applies peculiarly to this class of cases.

Account is also taken of the degree of the defendant's negligence, which, as classified by the law, may be slight, ordinary, or gross. If the defendant is guilty of gross negligence, punitive or exemplary damages may be inflicted, under the practice of several states; while for slight negligence compensatory damages only are awarded. Little practical significance is now given to the distinction between slight and ordinary negligence.

The insurance company by means of liability insurance assumes all such demands against its policy-holders, conducts negotiations for their settlement, pays the claimant when a meritorious claim is made and an adjustment reached, defends actions believed to have no merit, and pays all expenses incident to such adjustments and defenses, so that by the payment of a moderate premium the insured is relieved from annoyance and expense and is protected against a material hazard.

It is not a perfectly simple matter to calculate a premium upon a policy of liability insurance. While, in the first instance, the premium is a certain percentage of the expected expenditure of wages, other factors must be considered. Included in the calculations are the wages of the employés who are to be included as an element in the contract of insurance. The wages of all others must be excluded therefrom, because the policy provides that the insurance company shall be liable only for injuries caused by or inflicted upon employés whose names are upon the pay roll and upon whose wages a premium is paid. When the insurance covers injuries to persons other than employés, the contract contains a provision that such injuries as may be caused by employés upon whose wages a premium is paid shall be covered.

It is not unusual to agree in the contract that the wages reported for premium payment shall not include the salaries of officers of corporations or of men engaged in office work. These men are not much exposed to danger, neither do they so engage in or direct mechanical operations as to expose others to danger from their personal carelessness. The proprietor does not need insurance so far as these men are concerned and usually elects to omit their wages and take no insurance against their negligence. From his point of view, their salaries being large and the premium thereon considerable, he would be paying a high price for not much

protection. He therefore carries his own risk concerning officers and office men, and does not regret it until an accident occurs chargeable to the negligence of one of them, when he finds a hazard not protected by his insurance.

Not infrequently the managers of the establishment seeking insurance propose to omit also the salaries of superintendents and foremen, because they are well paid and the premium on their salaries would be large. The insurance company looks upon the omission of these salaries with much composure, because they are the men charged with direct responsibility for mechanical operations, through whose carelessness or oversight the majority of accidents occur. The omission of their wages relieves the insurance company from a large share of responsibility and omits from the contract a large share of the protection it is intended to furnish the insured. When the importance of the inclusion of these wages is clearly explained to the applicant, he generally insists upon paying the premium and taking a policy that will cover the negligence of superintendents and foremen.

Many manufacturing establishments carry on a great variety of operations in which the degree of hazard differs widely. In these it is customary to divide the pay roll, charging different rates according to the hazard of the occupation. This has been found more accurate and satisfactory than to attempt to reach an average rate upon a variety of hazards. In other cases certain work is done in the factory and certain other work consists in setting up and installing the product of the shop. Engines, electrical machinery, printing presses, and the like, are made in the factory and delivered, set up and put in operation by expert mechanics employed for that purpose by the builder. The factory hazard is one thing—usually the least—and the installation or construction hazard quite another. This is particularly true of steel bridges and other structural

steel work. It would be difficult to average factory work with outside work in such cases, and the equitable method is, therefore, to charge the proper rate for each.

Some examples of the cost of this kind of insurance may be given. The rate for woolen mills, including employes and the public, is 23 cents for each \$100 of pay roll. The premium for a mill employing 500 operatives, old and young, skilled and unskilled, at average wages of \$450 a year, would be \$517.50. And the cost of the insurance per capita is \$1.035. The rate for steel bridge construction is \$9 for each \$100 pay roll. A structure furnishing employment to 500 men of all grades, at average wages of \$700 a year, would require a premium of \$31,500 or \$63 per man. The difference in the probable number and gravity of accidents justifies the difference in rate.

No branch of insurance is more attractive than this, for in the selection, classification and comparison of risks at the home office and in the field as well, liability insurance presents a greater variety of problems than any other, and attracts the most versatile talent. No training or experience in the practical affairs of life and no knowledge to be derived from books comes amiss. The liability insurance man is an architect, a builder, an engineer, a manufacturer of almost every product, a miner, a merchant, and an all-round mechanic, and a superficial understanding of these various pursuits is not enough.

The agent who submits the risk must know enough of them to give a clear description of the operations to be insured, from which the home office underwriters and critics can form a fair estimate of the hazard or risk to which the insurance will apply. The proposal sets forth all the particulars material to the risk, and these can be neither stated nor understood by a man who has never seen the inside of a factory, a

foundry, a mine, or who has not carefully observed the construction of a building, a bridge or a railway.

Concerns engaged in the same line of business or manufacture differ widely in the methods employed, and in the safety devices used, and in the light, ventilation and cleanliness of their establishments, and all these things have a direct bearing upon the character of the risk and must be known before the proposal for insurance can be acted upon. The young man about to engage in liability insurance should bring to his work a well disciplined mind, a taste for mechanics and the habit of rapid and accurate observation.

He should also be a student of sociological questions and particularly of the relations of employer and employé, of capital and labor, and of the combinations and organizations of both, and in the prosecution of his work he cannot fail to become an observer of production, transportation, distribution and markets at home and abroad.

Every claim made by an injured person against the holder of a policy of liability insurance is a possible lawsuit, and it is the duty of the insurance company upon receiving notice of such a claim to assume the position of the defendant. A corps of lawyers and adjusters is, therefore, a material part of the equipment of a liability company. These men become specialists in their profession and not the least of the advantages of liability insurance is that the insured have the prompt and efficient service of an organization of trained experts. Many men conducting large and important industries, who have carried insurance for years, regard this feature of the service as more valuable than the payment of their losses.

In this business as well as in accident insurance, fraudulent claims are not uncommon. In most cases the claimant aggravates and protracts a slight injury for the purpose of recovering excessive damages, and in such cases no healing balm

effects so prompt, radical and permanent a cure as a liberal verdict. In other cases injuries are intentionally inflicted by the claimant upon himself. The detection and punishment of such frauds is one of the benefits the insurance company now and then renders the community, one of which may be stated to illustrate the class:

A young man conceived and carried into effect the idea of loosening or removing the bolts by which the handle used in getting on and off trolley cars is fastened to the car. He selected a crowded car in the evening and so had the advantage of confusion and darkness. When he left the car he took the handle with him, fell violently and sustained injuries that laid him up for several weeks. He collected damages from the railroad company for negligence. It worked so well that he adopted it as an occupation, but he never tried it on the same railroad company more than once. The fact that did not enter into his calculations was that the railway companies carried liability insurance, and his injuries were all investigated and settled by the same insurance company. When about the third claim came in, although another name had been assumed, the acute and experienced adjuster became suspicious. The claimant was shadowed when he recovered his health, was soon caught at work on a crowded car after dark with his faithful bicycle wrench, promptly confessed when confronted with the record of like offences, and was placed beyond the perils of trolley travel for a year.

It is better to prevent the occurrence of accidents than to pay damages to injured persons. With this object in view, the well organized company issuing liability insurance maintains a corps of trained mechanical inspectors, whose duty it is to examine every plant to which insurance applies. When practicable, this examination is made before the policy is issued, but generally it comes later and an inspection report

is filed with the record. The inspectors also become experts in their line, and when they report conditions that expose people to unnecessary danger the fact is brought to the attention of the insured with advice as to the best and most approved remedy for the danger. This advice is uniformly and gladly accepted and the remedy is applied.

All insurance is intended to cover the subject-matter of the contract against the normal, usual and necessary risks, to which the policy-holder is exposed. It is assumed concerning fire insurance, life insurance and accident insurance, and liability insurance, that the company is dealing with men of moral and financial responsibility, who recognize that the insurance contract imposes an obligation upon them as well as upon the company and that it is their duty to see that the insurance company is not exposed to any unnecessary danger. Premiums are calculated upon that basis, and no provision is made for wanton disregard of the safety of life, limb and property. It is the purpose of insurance companies to select for insurance only such risks as are backed by moral responsibility.

The application of this rule to liability insurance excludes all factories and other works in which dangerous machinery is used and in which the owners do not take suitable precautions for the protection of their employes and others having business upon the premises, against dark and obstructed staircases and passages, unguarded hoist-ways and elevators, unprotected gears and set screws, greasy floors and various other hazards that may be remedied by a reasonable regard for the safety of others.

The rule applies in like manner to the apparatus used by contractors in the construction of bridges and buildings, and to the equipment of electric lighting and power plants and lines, with proper means for protection against the deadly current. The work of the inspector furnishes evidence of the

facts, and while in the great majority of cases it is found that insurable conditions exist and are maintained, not only as an obligation to society but as matters of economy and efficiency, it now and then happens that a risk is found upon which no prudent underwriter would expose his company to loss.

The contract covers only the legal liability of the insured and does not extend to the moral obligation that sometimes exists of the employer to contribute to the aid of an employé injured in his service, although the injury may result entirely from the carelessness of the employé, and the employer may be under no legal obligation to provide for him. A moral obligation, or a duty to humanity, is not regarded as insurable. A policy-holder cannot pay a premium and commit his conscience to the keeping of an insurance company.

Hazards in different countries and in different parts of the same country differ in the prosecution of the same lines of business and with apparently equal equipments and methods. The business and mechanical atmosphere differ in the West and in the East. The West is characterized by greater energy and pressure. Whether it is to be thus accounted for or otherwise that accidents are more frequent under apparently like conditions, a shipbuilding plant on the Pacific may, in all the elements of completeness, efficiency and operation, be the equal of one on the Atlantic, but the insurable hazard is greater.

Bagehot says of the American, "that he is rapid and efficient, but his speed is a little headlong and his execution rough." It may be that observation of the American as it proceeds west will find an increased tendency in the direction indicated.

The maintenance of a reserve fund with which to meet the losses that must accrue under unexpired policies, is governed by the same principles that govern reserves for

accident policies. That is to say, that one-half the premiums received upon outstanding policies or the entire unearned portion of such premiums must be so reserved. The same statute applies to both and requires "a premium reserve on all policies in force, equal to the unearned portion of the gross premiums charged for covering the risk." The fund thus reserved is, as we may recall from the lecture of last week, in the nature of a sinking fund to meet obligations to accrue in the future.

Insurance companies, like other business organizations, have also a certain amount of obligations accrued, but for various reasons unsettled. It is easy to include these in the accounts of accident insurance as losses in adjustment and reserve for them a definite sum on the basis of the contract of insurance in each case. It is a more difficult matter to account with and reserve for liability losses in adjustment, and the difficulty arises from the facts that: (1) All such pending claims are for damages, the amount of which must be settled by verdict or by agreement of the parties. (2) From their nature claims in process of adjustment accumulate by inability to agree or by litigation. A liability company ten years in the business and receiving in premiums \$2,000,000 a year, may be defending for its patrons one thousand suits either because the insured was not negligent, or because the damages demanded are excessive. (3) For the same reasons, settlements and litigations are protracted, including many claims under policies from two to five years expired, upon which there remains no unearned premium reserve because the insurance is not in force. (4) The expense of affording protection to the insured is in such cases no more provided by premium reserve than is the value of the claims. From these premises the conclusion is obvious that some method is required whereby the value of claims accrued but unpaid may be ascertained and the company charged with a special reserve to meet them.

Several methods have been proposed for calculating such a reserve, but the one that meets with most approval is for each company to compute the value of claims in each class. (1) Pending suits against policy-holders; (2) Injuries reported by policy-holders upon which claims may be made; from its own completed experience. Statutes founded upon this principle were enacted in 1903 in Connecticut and in New York. In substance the New York law requires each company to take as its field for observation its own experience for a term of five years, commencing eight years and ending three years before the time its calculation and report is made. So few claims remain unsettled after three years that the experience of such a term is practically complete.

It becomes a simple matter of getting together statistics to find that during that term four thousand suits were tried, settled or dismissed, at a cost of all the way from nothing to \$5,000, and that the average cost was \$400. The reserve for the one thousand pending suits is \$400,000. Suppose it should further appear that during the same term ten thousand persons were reported injured and that claims were made by one-half the injured persons and were settled at an average cost of \$100 each. This would establish for the company in question a value of \$50 for each notice of injury. Comparison of experiences disclosed that no notice is beyond the probability of a claim until after the expiration of eighteen months, and so the framers of the statutes required a reserve at the value ascertained for all injuries suffered within eighteen months next preceding the report, of which notice had been received by the reporting company. A company finding on its hands five thousand notices of accidents not more than eighteen months old would have to reserve for them an additional sum of \$250,000, subject to certain deductions for suits upon recent notices that would otherwise be included both as pending suits and as pending notices.

Like many new measures, this law (or the method of making returns under its provisions) has been discovered to have some defects that must be remedied by such changes as may be found sufficient as the result of inquiries now in progress by the actuaries of one or more state insurance departments and by insurance experts.

The Connecticut and the New York statutes are based upon the same principle and differ only as to the term of completed experience to be observed for the collection of statistics upon which to compute the reserve.

That liability insurance is an interest that will rapidly and largely increase there is little reason to doubt. The enactment by the Parliament of Great Britain in 1897 of the Workmen's Compensation Act, a measure far in advance of the Employers Liability Act of 1880, plainly indicates the tendency to continue to increase the duty of the employer to the employé. It is the purpose of the law, which is a long and complicated one, to provide compensation to the employé for every "personal injury arising out of and in the course of the employment," whether the employer is chargeable with negligence or not. It is provided, however, that if the employer is guilty of gross negligence, the employé may recover upon his legal rights regardless of the statute, so that punitive damages may be inflicted in such cases. In order to recover under this act, the workman must be disabled at least two weeks. The amount of compensation to be recovered is fixed by a scale in which the principal items are these: A sum equal to three years' earnings if the injuries are fatal, payable to those dependent upon the deceased; medical and burial expenses if no dependents are left; for disabling injuries, half wages during disability; if disability proves to be permanent, compensation may be commuted into one sum in the manner prescribed by the act. Particular provision is made for arbi-

tration where differences exist, and for the application of insurance funds where the employer protects his liability by insurance, and for the enforcement of the act in other respects. The feature of the law is that compensation for injuries becomes in substance a part of the contract of employment, and is payable for accidental injuries for which the employer cannot be held liable under the law of negligence nor under the Employers Liability Act.

Other European states have adopted like laws and all are founded upon the theory that works that consume human lives should pay for them, not as a penalty for negligence, but as compensation for material used, the price of which is to be paid by the consumer.

This principle was first recognized in Germany, where in 1884 a law was passed requiring employers to insure their employés to the amount of two-thirds of their wages when disabled in the employers' service, and to provide pensions for widows and other dependents during dependency, if fatally injured. Austria in 1887 and Norway in 1894 enacted similar laws, the latter introducing insurance by the state. Finland followed in 1895, and other European countries have recent laws that in some respects resemble those of England, Germany, Austria, Norway, and Finland.

In 1903 the legislature of Massachusetts appointed a commission to consider the "Relations between Employer and Employee," of which Hon. Carroll D. Wright was chairman. Among the measures advised by the commission was a bill almost identical with the Workman's Compensation Act of Great Britain. The legislature of 1904 considered the bill, but it failed to pass. In 1905 it will be again considered. If it shall become a law in Massachusetts and if later other states shall follow, as they did when the Employers Liability Act was imported from England, the rates and methods of liability

insurance companies must be adjusted to meet another new condition. In such states as may pass such laws, the liability of employers will unquestionably be increased, but it will be definite and capable of accurate calculation in every case, and excessive damages will be inflicted only in cases in which punishment for gross negligence is deserved.

It is hardly within the scope of this lecture to discuss the wisdom of such laws. That may be done more judicially by men having no pecuniary interest in measures that increase the demand for insurance and its premium value. If the people of any of the states adopt such laws, it will become the business of the liability companies to make rates for the increased hazard, more or less experimentally at first, but with greater accuracy as experience accumulates. The problem will be one of some difficulty and its solution will probably occasion some loss to the companies that undertake it. That is almost always the case in entering a new field of insurance, but no class of men are more keenly interested in new and difficult problems than insurance men.

STEAM BOILER INSURANCE

BY A. D. RISTEEN

It was with some feeling of reluctance that I accepted the invitation of your committee, to deliver this address upon the subject of boiler insurance; for the original intention was, that it should be given by Mr. J. M. Allen, who was for thirty-seven years the President of the company that I represent, and who was undoubtedly the foremost authority upon the subject. It was he who first demonstrated the possibilities of steam boiler insurance on the large scale; and the success that ultimately crowned his efforts was won by hard, uphill work, against prejudice and even ridicule, that would have disheartened a man with a less positive conviction that an institution that gave definite benefits in return for a small premium, and which was based upon sound scientific, mechanical and financial principles, must ultimately triumph. You will pardon me, I know, for taking these few moments to pay so feeble a tribute to the man who created this branch of insurance, and who was to have spoken to you this afternoon. He died on December 28th, and by his death Hartford lost a liberal-minded, public-spirited citizen; insurance circles lost an underwriter who had won universal esteem and confidence; and you, gentlemen, lost the opportunity of learning of the fundamental principles of boiler insurance from him who first established them, and who knew the history of the subject as no other man could know it.

Before describing the methods by which boiler insurance is conducted, I wish to make a few general explanations, which

may serve to make the further discussion clearer. In the first place, we may fairly ask ourselves, "Is there a legitimate field for boiler insurance?" We know that there are such fields for life, casualty, fire, marine and indemnity insurance; for we know that all men must die, and we know that many of them meet with accidents; and we know that houses burn up, and that ships sink in the sea, and that men in responsible positions are not invariably true to their trusts. But do boilers actually explode and destroy lives and property? And if they do, is the chance that any given boiler will explode great enough to warrant placing it under insurance? These questions are both important, and I shall endeavor to answer them affirmatively, to your satisfaction; but for the moment I shall confine myself to the first one.

Do boilers explode? By way of a general reply to this question, I would say that during the period between January 1, 1879, and January 1, 1903, the Hartford Steam Boiler Inspection and Insurance Company, with which I am connected, has recorded no less than 6,386 boiler explosions in its little journal, *The Locomotive*; and you will find the date and locality of each one of them given there, always with some few general particulars, by the aid of which you can verify as many of the explosions as you may be disposed to. There can be no doubt that this list is very incomplete; but it is the best that can be had. By these 6,386 boiler explosions, 7,002 persons were killed, and 10,346 others were more or less seriously injured; so that the total number of persons killed and injured by boiler explosions during this period was at least 17,348. Many a city has a population not materially greater than this. In 1900, for example, the population of Rutland, Vt., was only 11,499; and it may fix the matter more firmly in your minds if I state it in this manner: During the period from January 1, 1879, to January 1, 1903, the number of per-

sons killed and injured by boiler explosions in the United States was at least 50 per cent. greater than the population of Rutland, according to the last census.

Even among those who admit that boilers explode, there appears to be a sort of mania for attributing all of the explosions to one single cause, low water. You can hardly pick up a newspaper containing an account of such an explosion, without reading about the negligence of the attendant, in permitting the water to get too low; and I have even known of attempts being made to *lynch* him, when the explosion has been attended by serious loss of life; and yet I am confident that, in many of these cases, the poor fellow had been as efficient and as careful as his experience and his intelligence would permit. About the only variation from the low water theory that is commonly encountered, is the "mysterious gas" theory, which attributes the disastrous results to some kind of a gas, known or unknown, which is assumed to have been generated so abundantly and so suddenly as to disrupt the steel of which the boiler was composed. I think the gas theory may be dismissed without further comment; but the low water theory requires passing notice. There can be no doubt that boilers *do* explode from low water; but, in connection with this admission, I wish to point out two things: First, that low water is not by any means the *only* cause; and second, that when an explosion really is due to low water, it is not likely to be a very disastrous one. When a boiler explodes, it does so merely because it is not strong enough to withstand the pressure that is within it; and any cause whatsoever which renders it incapable of sustaining that pressure is bound to produce an explosion, or, at least, a rupture. It appears that this fact is simple enough to be admitted by any one; but you will find that its truth is *not* universally recognized, and that most men prefer "spheroidal

theories" and "red gases" and other improbable things, to this very obvious explanation.

My statement that a low water explosion is likely to be less disastrous than an explosion attended by a plentiful supply of water is based upon the fact that the energy contained in a cubic foot of steam is far less than that contained in a cubic foot of water at the same temperature. Pound for pound, steam contains the more energy; but cubic foot for cubic foot, the balance is very largely indeed in favor of the water. And in comparing the explosive energies of two similar boilers, one of which is filled with steam and the other with water at the same temperature, it is the capacity of the boilers in cubic feet that must be considered, rather than the weights of their contents. If you are desirous of pursuing this phase of the question further, I would refer you to Professor R. H. Thurston's little work on "Steam Boiler Explosions," where the subject is considered in detail.

To satisfy you still further that boilers do explode, and that the explosions are frequently accompanied by great destruction, I desire to show you a few views illustrating the ruin wrought by some of the more notable explosions that have occurred recently. [At this point eight lantern slides were exhibited, illustrating the destruction of property from the explosion of various steam boilers; the lecturer explaining that he had specially selected the views so that they should represent as many different *types* of boilers as possible.]

The idea of insuring steam boilers for substantial amounts originated in Hartford (so far as I know), about the year 1857. The Steam Users' Association of Manchester, England, was already organized in England, with the object of preventing boiler explosions by means of periodical inspections. Under the system as started there, the manufacturer paid a certain sum annually for the examinations, receiving in

return either a certificate of the safe condition of his boilers or a report condemning them; but the certificate, like those issued in some parts of this country by direct appointees of the State, involved no pecuniary obligation on the part of the association, and, while it relieved the holder from the charge of carelessness in case of disaster, it entitled him to no indemnity. In 1857 a number of young men in Hartford, drawn together by similarity of tastes, organized the Polytechnic Club with the view, primarily, of investigating and discussing questions of science in relation to the utilities of practical life. Although the membership of this club was small, it included such men as Francis A. Pratt, Amos W. Whitney, J. M. Allen, and your own Prof. C. B. Richards. I suspect that the attention of the club was first directed to boiler insurance by the destruction of the car factory of Fales & Gray by a boiler explosion on March 2, 1854. The factory was located on the Connecticut River, at the foot of Potter Street, in Hartford, and the explosion was one of great force. Whether this was the origin of the idea or not, it is certain that the Polytechnic Club evolved the plan of combining a *substantial guarantee* with the inspection, thus giving both parties to the contract a pecuniary interest in the safety of the boiler. Owing to the intervention of the Civil War, nothing was done in the way of materializing this idea until 1866, when the Hartford Steam Boiler Inspection and Insurance Company was organized and incorporated under the laws of Connecticut.

The company with which I am associated, you will see, was therefore the first company in the world to engage in the business of boiler insurance, in such a way as to provide *substantial indemnity* in the case of loss by explosion or rupture. Its growth has been rapid, and while there are several other companies now engaged in the business, the Hart-

ford Company is still by far the largest company in the world, which devotes its entire attention to the subject of boiler insurance. You will pardon me, under these circumstances, if I may appear to give it undue prominence in what I have to say.

In boiler insurance the fundamental object ought to be, to *prevent* explosions so far as possible. The life insurance companies cannot guard themselves in this manner, save in the most general way. The fire companies can do much more, and they do aim to prevent fires so far as possible by a system of inspection which is designed to detect and remove special sources of danger. The boiler insurance companies can go even further in this direction, however, and experience has shown that it is possible, by thorough inspection, to prevent explosions in a very large measure. Prevention, then, is the key note of successful boiler insurance; and a very large proportion of the income of a boiler insurance company is expended in the making of inspections, and in other similar services to the assured, which tend to lessen the likelihood of an explosion. The Hartford Company maintains a chemical laboratory, for example, in which troublesome feed waters are analyzed, and appropriate methods discovered for the treatment of these waters, so that they may be used successfully in the boilers in which they have been found to give trouble. The Hartford Company also maintains a department of design, in which plans and specifications for boilers and boiler settings are prepared for the assured, no charge being made for these unless the labor involved is considerable; and in that case the charge is merely nominal, and is intended simply to cover the actual expense to which the insurance company is put.

I imagine that you will want to know something about the way in which the premiums that are received by the boiler insurance companies are expended. I cannot answer this for

others, but, so far as the Hartford Company is concerned, it may be said that the premium receipts are divisible into a maximum portion of about 90 per cent. of the whole, and a minimum portion of about 10 per cent.—the 10 per cent. representing, roughly, the amount that may be regarded as set aside to provide for the payment of losses due to explosions, while the 90 per cent. represents what is expended in procuring the risks, and in inspecting them with such care as to prevent the 10 per cent. from being drawn upon. I am not authoritatively informed as to the percentage that other companies have found it necessary to reserve for the payment of losses; but, as I have said, the experience of the Hartford Company indicates that it is good business to expend a very large portion of the total premiums upon the making of inspections, an expenditure of 90 per cent. making it possible to more than cover the actual losses by the 10 per cent. fraction remaining.

The general method of conducting the business of boiler insurance at the present time will best be made clear, perhaps, by tracing the steps by which an insurance contract in this field is made and consummated. Like all other insurance companies, the boiler insurance companies employ agents, whose business it is to go about and harrow the unoffending owner of boilers with statistics of explosions; and with literature that is, from the nature of the business, calculated to disturb his rest at night; and also by exhibiting desolate photographs (such as I have shown you to-day in a more Christian spirit), depicting the ruin wrought in a single second to mills and factories once as valuable and as well cared for, as his own. All these things are done, I say; and in this respect you will see how similar boiler insurance methods are to those of life insurance. If nobody has yet addressed you upon this phase of insurance, somebody ought to; and hence

I shall not attempt to foreshadow the practical ideas that he may have in store for you, but will pass on to those features that are distinctive in the line of work under consideration.

The boiler owner being assumed to be persuaded of the wisdom of taking out a policy, the next questions to be determined are these: (1st) The term, or duration, of the policy. (2d) The amount for which it shall be written. (3d) The premium that shall be paid.

First, as to the term of the policy. This happens to be a very simple matter, for nearly all boiler insurance policies are written for three years, and it is only under exceptional circumstances that this practice is modified. I may as well explain, once for all, that what I shall have to say relates to the great mass of the business of the company with which I am connected; and it is to be understood throughout that, when a statement is made, it merely represents this general practice. Reasonable persons may nearly always be expected to do reasonable things; and boiler insurance companies are always willing to take account of any exceptional conditions that a given case may present, and to modify their practice accordingly;—provided the proposed modification does not interfere with the desirability of the risk. The general rule of the business is, then, to write policies for three years.

Second, as to the amount for which the policy is to be written. This problem and the third one,—namely, the amount of the premium,—are intimately connected. For it is evident that the total amount of the premium must be sufficient to repay the insurance company for the expenses incurred in obtaining the risk, and for those incurred in inspecting the boiler periodically while it is insured; and there must also be an excess, over and above these sums, to be set aside for the payment of such losses as may be incurred by explosion. In the early days, it was customary to fix the rate to be

charged by means of a sort of sliding scale, the rate being higher for high pressures than for low ones, and higher for boilers that had been in service for some time than for those that were just out of the maker's shop. At the present time, however, it is not the practice to vary the rate in this manner; and the great bulk of the business is now written at a uniform rate of 1 per cent. for the three years, provided the face of the policy is great enough for this rate to yield a premium sufficient to cover the three items just noted;—that is, the expense of obtaining the risk, of inspecting it periodically, and of insuring it. It is not profitable to insure isolated boilers at this rate for a smaller sum than \$5,000 each—the rate of 1 per cent. for three years yielding, in this case, the sum of \$50 for the three years, or an average premium of \$16.67 per annum.

In large plants, where there are many boilers, a smaller sum than \$5,000 per boiler may be sufficient; for, in such plants, the inspectors can usually arrange to examine several boilers on each trip, and thus reduce the expense of inspection per boiler. A battery of ten boilers, for example, might reasonably be insured for \$40,000, at a rate of 1 per cent. for three years; this yielding a total premium for the three years of \$400, which is at the rate of $\$133\frac{1}{3}$ per annum for the ten boilers. The business should be good at this figure, if several of the boilers can be had for inspection at the same time, and if the plant is not too far removed from the ordinary routes of travel. In general, therefore, the face of the policy is computed by allowing, for each boiler in the plant, something like \$5,000 if the plant is a small one, or somewhat less than this if it is a large one; and the total premium to be paid for the three years that the policy is to run is then computed by taking 1 per cent. of the face of the policy as so determined. It will be readily understood that when

the risk is of an unusual character, this general rule has to be modified accordingly. For example, a single high-pressure boiler, bursting in the basement of a factory whose product or machinery is especially valuable, might easily do far more than \$5,000 of damage; and, if numerous workmen were employed in parts of the building near to the boiler, the likelihood of a considerable loss of life and personal injury would have to be specially considered. The face of the policy would then naturally be increased, so as to take account of the probable gravity of the results of an explosion. The *rate* charged for the insurance would not ordinarily be raised in such a case, however; for the standard rate of 1 per cent. for three years would yield a larger gross premium, and the expenses of solicitation and inspection being fixed, it is evident that that part of the premium which would be available for the payment of *losses* would be proportionately greater with the large premium than with the smaller one; and the insurance company therefore has a larger proportionate sum that can be set aside to provide for the increased possibility of a serious explosion.

I cannot emphasize too strongly the fact that there is *no* rate at which a boiler is insurable, when there is any reason to doubt its safety. In fire insurance an extra hazardous risk may be provided for by an increase in the rate of insurance; but in boiler insurance this practice is not followed. It is considered that the ordinary hazards that are necessarily attached to the use of high pressure steam are quite great enough; and a boiler that is not regarded as safe for the pressure to be carried, is not considered to be a fit subject for insurance *at any rate whatsoever*. Moreover, I may add that experience has shown that in boiler insurance the moral hazard is negligible. Men doubtless burn their own property occasionally, for the purpose of recovering the insurance

upon it; but it is doubtful if they ever intentionally cause their own boilers to explode.

It being assumed, now, that the agent and the boiler owner have agreed upon the term of the insurance, and upon the sum for which the policy is to be written, and upon the premium that is to be paid, the next step is to make out a formal application for the insurance. Suitable blanks are, of course, provided for this purpose, and the agent fills them in by specifying the number, type and location of the boilers, the name of the person or corporation owning them, the face of the policy desired, the term for which the policy is to run, and the premium that is to be paid. The owner then signs this application, and his signature completes his relations with the agent.

The application, thus made out, is then forwarded to the home office, or to the branch office to which the agent is accredited. The next step is analogous to the corresponding one in life insurance. In life insurance, after the application is made out, the question arises, whether or not the medical examiner will accept the risk; and this point is determined by making a careful physical examination of the applicant. So in boiler insurance, the next step after the delivery of the application is for the insurance company to send, to the mill or factory, one of its experts in steam boiler construction and management, to pronounce judgment upon the condition of the boilers, and to give his opinion as to whether they are or are not in insurable condition. This expert is technically known as an "inspector." After having made arrangements with the owner to have the boilers cool and ready for examination, the inspector proceeds to the plant where they are located, and examines them with great care. I think that I may safely say, that his examination is even more searching than that which is given in the case of life

insurance. If the boilers are of a type that will admit of it, he enters them, crawling all about them internally, and noting the dimensions and the actual present condition of every essential part. He also makes a corresponding examination of the external surfaces, recording the thickness of the plates, the pitch of the rivets, and many other items that have to do with the strength of the boiler, and its ability to safely withstand the working pressure that the owner desires to carry. The numerical data that he thus obtains are entered in blank spaces that are provided upon the inner pages of the same application that the owner has signed. To give some idea of the minuteness of his examination, I may say that the blanks that he has to fill out contain forty-two main questions, many of which have several sub-questions under them, so that in all he has to answer perhaps as many as seventy-five different questions. I cannot give the exact number, because it naturally varies a little, with the type of boiler. Questions relating to water tube boilers, for example, are passed over when the boilers under consideration are of the fire tube type.

It sometimes happens that the boilers are of such small size, or of such a type, that they cannot be actually entered by the inspector. In cases of this kind, he has to infer their internal condition by making an examination through the several small openings that should always be provided in such boilers, and which are technically known as "hand-holes." In such cases he also applies a "hydrostatic pressure" to the boilers. This consists in filling them entirely up with water, and then forcing a small additional quantity of water into them by means of a pump. By this means a considerable stress is easily brought upon the boilers, and, when they are thus under pressure, the inspector notes, carefully, whether or not they show signs of distress. The distress may make itself manifest by leakage from the joints or tube ends, or by

the breakage of some essential part, or by the bulging, collapse or rupture of some portion of the boiler, or in other ways that I do not need to specially mention.

Having made a thorough examination, the inspector fills out the blanks provided for this purpose upon the inner pages of the original application, and then transmits the application to the chief inspector of the office from which he comes. He also gives his judgment, based upon the construction, age and condition of the boilers, and upon his previous experience with boilers of the same type, as to the working pressure that the boilers can safely withstand. And, finally, he submits a written report to his office, describing in detail the condition in which he found the boilers; a copy of this report being subsequently forwarded to the boiler owner. It often happens that a thorough inspection of this sort results in the discovery of some defect or structural weakness, which may even be imminently dangerous, and which had not been previously suspected. In such a case the fact is, of course, immediately reported to the boiler owner, and definite recommendations are made as to the alterations or repairs that are required, in order to put the boilers into safe condition again. The owner is also informed that the negotiations can proceed no further until the suggested alterations have been made, and the inspector has subsequently satisfied himself by a second inspection, not only that they have been made, but that they have been made properly and well.

It sometimes happens, too, that the preliminary inspection discloses the fact that the boiler is in such bad shape that it would be impossible, or at least unprofitable, to try to repair it; and in this event the inspector condemns it;—or, which is the same thing, he pronounces it uninsurable. I should like to state, however, that wholesale condemnation is not favored by the boiler insurance companies. They would indeed like

to insure nothing but ideally perfect boilers; yet in condemning boilers that are already in service, the inspector is expected to exercise his best judgment, in accordance with safe rules, for the benefit of all concerned;—that is, on behalf of the insured, as well as of the company that employs him. His judgment is a disinterested one, so far as he is concerned personally, for his compensation is the same whether he accepts the boiler or rejects it. His company will not insure a boiler that is believed to be unsafe, nor does the owner desire to replace a boiler that is really safe and satisfactory, merely because the inspector would like him to have a somewhat better one. The task of the inspector who condemns a boiler is therefore seen to be a delicate one, involving a number of important considerations; and he is required to give his superior officers in the insurance company full and sufficient reasons for his condemnation, so that the prospective insurer may be really satisfied, in his own mind, that the condemnation is justifiable from his own point of view, as well as from that of the insurance company. I may say that in our own practice (and I know nothing about that of other companies in this respect), we rarely find the boiler owner dissatisfied with the reasons for condemnation that are furnished to him. We cannot force him to replace a defective boiler with a new one; but we almost invariably find him ready to give proper attention to our criticisms; and when he really ought to have a new boiler, it is seldom difficult to convince him of that fact.

Assuming, now, that the inspector has satisfied himself that the boilers upon which insurance is desired are really in good condition, the next step is the review of the opinion of the inspector by the chief inspector of his department. This corresponds to the medical director's review, in life insurance, of the opinion given by the examining physician. The chief inspector takes in hand the various measurements and other

data obtained by the inspector's examination, and by the aid of them he carefully computes the safe working pressure that his company would be willing to allow the boiler to carry. Usually the estimate so obtained will be found to agree satisfactorily with that given by the inspector; but it sometimes happens that this careful calculation reveals a source of weakness at some point, whose importance the practical eye of the inspector did not perceive; and, in such a case, the owner of the boiler is notified of the finding, and he must see that the error of construction is remedied before the insurance company will take any further steps towards the issuance of his policy.

If the inspector and the chief inspector are both satisfied of the safety of the boiler at the time that it is offered for insurance, the policy is issued to the owner, who is thereafter protected, up to an amount equal to the face of the policy, against loss of property from the explosion, rupture, or collapse of his boiler or of any part of it, owing to the pressure of steam. He is also protected (always within the amount for which the policy is written) for any loss or damage to which he may be subjected, from the same cause, by reason of the destruction of his neighbors' property, or by reason of loss of life or of personal injuries to any persons whatever. The damages from loss of life, or from personal injuries, are determined, in this line of insurance as well as in other lines, by the earning capacity of the victims; and also, in the case of personal injuries, by the time during which the unfortunate ones are incapacitated. It is usual to specify in the policy, however, that the liability of the insurance company shall not exceed \$5,000 in the case of any one death.

After the issuance of the policy, the insurance company, primarily for its own protection, but also, incidentally, in the interest of the assured, regularly makes four inspections of

each boiler, per annum; and it reserves the right of access, at any time, to the boilers that are insured, and to any and all machinery that may be concerned in the safe operation of the boilers. Of the four inspections that are made per annum, at least one is a complete internal and external inspection, similar to that which is given at the outset, except that it is not necessary to repeat the measurements, these being made once for all. The inspector making these complete inspections prepares a detailed written report in each case, stating in full the condition in which the boilers were found; and a copy of every such report is transmitted to the owner of the boilers.

In these routine inspections, it often happens that the inspector finds that defects or weaknesses have developed, in the course of the service of the boilers; for boilers, like all other structures that are put to constant use under trying conditions, wear out, and develop troubles of various kinds. In fact, the number of different ways in which steam boilers can go wrong would surprise any person not familiar with the general facts of the case. Many of the defects that are discovered in this way, and pointed out to the owners, are of such a nature that they would be overlooked by the regular attendant. For the regular attendant, even although he has been in charge of boilers for many years, and may be an unusually competent engineer or fireman, has, at most, seen but few boilers, and so far as his actual experience goes, he cannot be expected to be familiar with many different kinds of defects. The inspector of the insurance company, on the other hand, has seen hundreds and perhaps thousands of boilers (the Hartford Company insures over 95,000 boilers at the present time), and has watched many of them from year to year, under the most varying conditions; and his training has fitted him to detect and intelligently foresee the consequences of defects whose importance the man in immediate charge of the boilers would probably never adequately appreciate.

Defects that develop in use, and which are detected in the course of the regular periodical inspections, are pointed out to the owner of the boilers in the written reports that are submitted to him. If they are considered trivial, that fact is indicated, and he is requested to bear them in mind, so that any tendency that they may manifest towards increase may be promptly noted. If they are considered to be bordering upon danger, his attention is similarly directed to them, and he is requested to have the necessary repairs made at his earliest convenience, the fact that they have been properly made being subsequently verified by the inspector in person. If they are still more serious, and are considered by the inspector to be immediately dangerous, the owner is notified of this fact also, and he is warned not to put the boiler into service again until it has been made safe. Of course, the insurance company has no way in which to enforce its recommendations; but, if compliance with them is refused, the company reserves the right to cancel the insurance at once, and few owners care to incur this penalty. For it is universally admitted that the inspectors are, as a class, men of wide experience and good judgment; and, if an explosion should occur after the owner has refused to comply with their suggestions and has had his policy cancelled in consequence, he will not only lose the insurance, but he will also be liable to be subject to heavy suits for damages, on the ground of culpable negligence in refusing to act upon the advice that the inspector gave him, before the accident.

When policies are discontinued in this manner, it is customary for the insurance company to return to the assured a certain fraction of the total premium that has been paid. The amount so returned is fixed by deducting from the premium a sum sufficient to compensate the company for the actual expense to which it has been put, and then returning a pro

rata fraction of the balance. That is, of the balance remaining after deducting expenses, the assured receives an amount which stands to the whole balance in the same proportion that the unexpired part of the term of the policy bears to the whole.

In order that you may have some idea of the scale upon which boiler inspections are now made, I may say that, in the year 1902, the Hartford Company (which constantly employs more than 200 inspectors) made 105,675 complete internal and external inspections of steam boilers, and detected 145,489 defects, of which 13,032 were considered to be dangerous. In the same year it condemned no less than 1,004 boilers as unsafe for further use, good and sufficient reasons for such condemnation being given in every case. From the beginning of its business down to January 1, 1903, it had similarly condemned 15,169 boilers; and, when it is remembered that in most of these cases the owners had no idea of the danger of their boilers until the inspector had visited them, you will see that there is some substantial ground for our claim that boiler insurance is (or should be) very largely *preventive*.

I have said that it is customary to make at least four inspections of each insured boiler per annum, and I have also said that at least one of these is a complete internal and external inspection, of which the owner is notified in advance, and for which he has his boilers cooled and emptied and otherwise prepared. The remaining inspections are technically known as "externals," since they are made while the boiler is in service, and must therefore be confined to the examination of such conditions as can be observed or inferred without entering the boilers. No notification is given in advance of these visits, and consequently no preparation is made for them. The intention is, that the inspector shall have the opportunity of viewing the plant when his coming was not expected, so that he may see it under the ordinary running conditions. He exam-

ines the safety valve to assure himself that it is working freely, notes the pressure that is being carried and compares it with the limit that the policy fixes, observes the height of the water in the boiler, and tries the gauge cocks to see if they and the water glass are free. In short, he looks about him generally, to make sure that the boilers are in safe hands, and that they are being cared for properly.

To illustrate the importance of these "external" inspections, let me cite one instance that came under my notice. One of our inspectors from the Hartford office visited a cotton mill in Massachusetts for the purpose of making an "external" examination under ordinary running conditions, and found that nobody was present. The attendant had doubtless been there within a short time, but he had vacated the premises for some purpose.

The inspector had hardly entered the room when his experienced ear detected a noise of escaping steam, which he felt assured was not due to any ordinary leakage about a pipe joint. Passing to the rear end of one of the boilers, he opened a door in the brick setting, and speedily satisfied himself that serious trouble was imminent. In an emergency of this kind, the first thing to do is to draw the fire from under the boiler, and (when there are several boilers running together) shut the valve in the steampipe that connects this boiler to its neighbors. By this means the pressure in the suspected boiler is caused to fall gradually, so that the boiler becomes every moment safer. The inspector was just finishing this operation when the attendant returned and, not knowing who he was, challenged him for interfering with the plant. Explanations followed, and when the boiler had cooled sufficiently to permit of examination, it was found that the brick arch over the rear end of the furnace had fallen down, allowing the incandescent products of combustion to strike directly against the upper

part of the rear head; and this, being unprotected by water, had become overheated to such a degree that the back head had bulged out, and the brace rivets had drawn through their holes, permitting the steam in the boiler to escape and make the sound which had first attracted the inspector's attention. I do not know how many of you will find this technical description intelligible; but permit me to say that the accident was of a very serious kind, and that it is probable that in a few minutes more the entire back head of the boiler would have blown out, with a consequent sudden liberation of energy sufficient to destroy the boiler house, and perhaps a considerable part of the main mill adjoining it.

In conclusion, let me state the methods that are followed in the settlement of losses. When, in spite of the care taken by the inspectors, a boiler explodes and entails loss of property, and probably also loss of life and injury to person, the assured is supposed to notify the insurance company of the loss as promptly as possible. The insurance company then sends its adjuster to the scene of the explosion, and he performs two duties. One of these consists in looking over the ruins in the interest of the insurance company, so as to learn the cause of the explosion, so far as possible. The information obtained in this way has been found to be very serviceable in the prevention of other explosions from similar causes; so that in this way all the patrons of the insurance company derive an indirect benefit from every explosion upon which the insurance company loses. The adjuster also looks over the damaged property in company with some representative of the owner, and together they attempt to reach a fair estimate of the amount of the loss. It usually happens that an agreement of this sort can be reached without trouble; but in case of an irreconcilable difference of opinion, some third and presumably disinterested person is agreed upon as an arbitrator. The loss

or damage to which the assured has been subjected being determined, the insurance company forwards its draft in settlement at the earliest date possible, in order that the assured may not be embarrassed any more than necessary in the repairing of the damage to his plant. The compensation to be awarded by the assured to the injured and to the legal representatives of the killed are determined in a similar manner, and the award agreed upon is included, of course, in the draft that is forwarded to the insured.

The usefulness of the boiler insurance company should not cease with the payment of the loss; because the representatives of the insurance company have seen so many cases of destruction from boiler explosions that they are usually capable of giving valuable advice as to the best methods of clearing away the wreckage, and of restoring the plant to its original condition of efficiency. Services of this kind are supposed to be given freely, and without charge; because it is understood, throughout the relations of the insurance company and the assured, that the interests of the assured are to be safeguarded and promoted in every way possible.

You will see from what has been said, that boiler insurance differs in many respects from insurance of other kinds. It does not involve statistical studies to any considerable extent, and the problems that arise are mainly those of constructive engineering, and of the practical management of boilers, so as to prevent deterioration and detect and remedy any defects that may develop in the course of their operation.

I promised, earlier in this paper, that I would consider the question, "Is the chance that any given boiler will explode, great enough to warrant placing it under insurance?" I told you that experience has shown that a rate of 1 per cent. for three years has been found to be sufficient to enable the insurance company to carry on its business soundly and with profit.

This corresponds to an annual charge of one three-hundredth part of the face of the policy. I also explained that something like 10 per cent. of this amount is all that need be reserved for the payment of losses, the remaining 90 per cent. being expended in making inspections, and in other necessary ways,—most of this large expenditure being of direct benefit to the assured, since the inspections that are made are of exceeding value to him, in prolonging the life of his boilers, and in promoting their efficiency. The annual reserve, to cover the liability of explosion alone, is therefore only one three-thousandth part of the face of the policy. If the face of the policy fairly represents the damage that an explosion would be likely to cause, you will therefore see that the insurance company's rate is equivalent (from the standpoint of the theory of probabilities) to an even bet that an insured boiler, when inspected and cared for as the insurance company does actually inspect it and care for it, would not blow up in three thousand years, if the natural and inevitable deterioration of the boiler through use would permit of its being kept in service for that length of time. I think I need hardly say that a rate which is based upon a probability of this sort cannot be considered to be in the least degree exorbitant.

CORPORATE SURETY BONDING

AS CONDUCTED IN THE UNITED STATES

BY J. FRANK SUPPLEE

From the most ancient times the principles of suretyship seem to have been recognized and its use practiced, and men have been held as hostages for performance of pledges or to bind for obligations assumed. We read in Genesis, forty-third chapter, of Judah agreeing with his aged father Jacob, to be surety for the safe return of his younger brother, Benjamin, from Egypt. That it was universally practiced among Eastern nations, we can readily infer from the Scriptural allusions to the evils of personal surety, for in Proverbs there are several warnings given against the practice, notably: "He that is surety for a stranger shall smart for it; and he that hateth suretyship is sure."

In the dawn of civilization, when the basis of our present jurisprudence and commercial law was being laid, suretyship was had in the custody of hostage or of live stock, a deposit of coin or chattels, and later by individuals pledging their respective possessions through the medium of a written obligation or bond. This practice is still in vogue on the Continent of Europe, and in France is called "Cautionment."

From English commercial history we learn that the practice of personal surety had resulted so disastrously after centuries of its use and abuse, that there was chartered and organized in 1840, the "Guaranty Society of London," for the purpose of supplying corporate surety for those desiring

guarantee of the fidelity of persons holding positions of trust or financial responsibility. The business in England and the British Provinces assumed large proportions and became an established branch of insurance half a century ago. It is a matter of surprise that it was so long a time thereafter before corporate surety had secured a foothold on this Continent, but the mother country has ever been a prolific field for every conceivable phase of insurance, and some species now in vogue there are unknown here, notably the purchase of speculative insurance upon the lives of ruling monarchs or public men by individuals in no way related or connected with them, and the insurance of theatrical or business ventures against stress of weather which might prevent profitable patronage.

The legislature of the State of New York in 1853 passed the initial Act authorizing the formation of surety companies in the United States, but it was not until 1875 that the first company was organized and actually wrote surety under a charter from that State. Meanwhile, in 1872, the Guarantee Company of North America, a conservative Canadian Company, still in existence, introduced Corporate Surety into the United States. We shall not attempt to rehearse the detailed history of the incorporation and progress of the respective companies engaged in the business, but shall only briefly outline those whose inception mark notable periods of the development of the business.

In 1884 the American Surety Company of New York was organized. Its presents capital is \$2,500,000, with a surplus of an equal amount. This was an indication that business men had begun to recognize that personal surety had so many dangerous drawbacks, both from the standpoint of obliger and obligee, that there was a crying necessity for the embarkation in Corporate Surety of large capital and effective organization. The Canadian Company had limited its guarantees

to officers of banks, railroads and other corporations. The New York Company increased its sphere of usefulness by including in its guarantees bonds for contractors and for fiduciaries and bonds furnished in court undertakings generally. These companies, however, did not attempt to enter the immense field of bonding public officials of the National Government and of the various States and municipalities. Several years after this, there were a number of notable defalcations of public officials throughout the United States. In 1889, in the State of Maryland, there occurred a sensational act of financial default, not on account of the amount involved, but from the prominence of the transgressor, which aroused intense interest in the commonwealth, and accentuated the necessity of protection against the dishonesty of public officials. The Treasurer of the State, elected by the legislature, previously honored by several terms in Congress, a distinguished lawyer, whose standing was such in the county where he resided, that the settlement of a majority of the estates of its decedents was entrusted to his hands, was discovered to have abstracted sinking fund securities from the safe deposit box to which he had official access. He was convicted, sentenced to the penitentiary and pardoned after years of penal servitude, to die soon after a broken, decrepit old man. Suit brought against his personal surety had the result, usual in such cases, of failing to reimburse the State, and public opinion demanded better protection for public funds.

In 1890 the Fidelity and Deposit Company of Maryland was chartered to do a surety and guaranty business in all its branches, including the fidelity of public officials. This company now has a capital of \$2,000,000, and total assets of about \$6,000,000. It was followed, a few years after, by the organization on the same lines of the American Bonding

Company of Baltimore, with present capital of \$1,000,000, and assets of about \$2,250,000, and the United States Fidelity and Guaranty Company of the same city with capital of \$1,700,000 and assets of \$3,250,000. These three companies, with combined assets of nearly \$12,000,000, have made Baltimore universally known as a stronghold of corporate surety. In New York the Fidelity and Casualty Company, which has a department of surety insurance, has accumulated assets of nearly \$6,000,000, and has enjoyed a most prosperous career. The National Surety Company of the same city has assets of about \$1,750,000, and is widely known. In Philadelphia the City Trust and Safe Deposit and Surety Company has assets of about \$3,500,000, and is represented in a number of States. The Title Guarantee and Trust Company of Scranton, Pa., has assets of about \$1,000,000, and has entered a number of States.

There are said to be thirty-four surety companies in existence in the United States, mostly local, however, and of limited capital and contracted sphere of usefulness. There are about twelve companies which compete generally for business throughout a number of States, but only four or five aim to cover the whole country. The amount of deposit required by the respective States, ranging from \$25,000 to \$200,000, as a condition necessary for doing business therein, acts as an embargo upon the companies, and only one of them has qualified to do business in every State of the Union, the United States Fidelity & Guaranty Co., which company has nearly \$1,000,000 in securities deposited with the respective State officials as qualification for doing business in all the commonwealths.

The surety companies have demonstrated that:

"No pent-up Utica contracts our powers,
The whole, the boundless Continent is ours,"

by spreading out into Canada and Mexico, and one has invaded the shores of old Albion, while another has penetrated into France and domiciled itself in Paris.

In addition to the companies regularly chartered to write surety, in some States trust companies, under their charter, are permitted to do surety bonding. Of late years, however, there has developed sturdy opposition to this feature of their business by stockholders, and the courts have deprecated such dual pledge of their resources. In several States the legislature have enacted laws compelling a divorce of banking from surety, and it is deemed only a question of time when all corporations accepting deposits will be compelled to discontinue surety bonding.

The published statistics for the year 1902 of the twelve leading companies engaged in the business of surety, show the following aggregate results :

Total capital and surplus.....	\$ 32,100,000
Amount of insurance in force.....	2,646,000,000
Net premiums received.....	10,618,000
Losses incurred to premiums	31.4 per cent.
Management expenses	65.3 per cent.

The average rate obtained for risks seemed to be 37.03 per hundred, that is about $\frac{1}{10}$ per cent. on the penalty of the bond.

There has been fierce competition among the companies, and rates have been cut to a degree probably unknown in any other department of insurance. This has arisen from the comparative newness of corporate surety, from the absence of reliable statistics as to losses, and the general want of concerted action and reasonable coöperation between the companies.

Having thus sketched as briefly as possible the history and

statistical results, we naturally pass to some information and observations upon the internal organization of the companies, and their management. The Home Office is usually dominated by the Executive Department, consisting of a President, several Vice Presidents, and others who serve on the staff of the Chief Executive, and who are his advisers and assistants; Secretary-Treasurer, who is at the head of the Financial and Auditing Departments, and a Board of Directors elected by the stockholders annually, complete the executive management. In all of these details the direction of a surety company differs but slightly from the organization of trust companies generally, but it is the interior organization of the respective departments, where the business is handled, of which information may be valuable.

The Banking Department is one of prime importance, whose Chief takes cognizance of the surety desired by banks, trust companies and other financial institutions having banking features. The Fidelity Department authorizes bonds of a fidelity nature, such as bookkeepers, salesmen, collectors, cashiers, treasurers and office men generally. As a sub-division, official bonds, that is bonds of national, State, county and city officials, whether elected or appointed, and their deputies and clerks are passed upon by a Chief, who also takes note of all matters regarding the monthly or quarterly reports of all officials handling funds. In this connection it is well to state that fiduciaries of any nature whatever, are compelled to keep systematic, accurate accounts, which shall always be open for inspection to the inspectors of the company. Another sub-division has a head whose duties are to pass upon fraternal bonds, that is bonds required by fraternal and beneficial societies from their officers and employees.

The Judicial Department is closely allied with the legal officers of the company and the general counsel with his

assistants aid its superintendent in passing upon bonds for executors, administrators, and those filed in bankruptcy proceedings, and upon replevin, trustee, receiver, guardian, attachment, injunction, supersedeas, appeal, security for costs, committee, assignee in insolvency, indemnity to sheriff, to release an attachment, to dissolve an injunction, etc.

The Railroad and Transportation Departments scan bonds required by railroads, whether operated by steam or electricity, and by express companies for their employees and shippers, and all bonds given by these companies to the Government of the United States, counties or municipalities.

The Contract Department has charge of bonds covering contracts of every character of construction, such as grading and bricklaying, blasting, building bridges, sewers, asphalt or brick pavements, erection and installation of machinery for all purposes, ship-building, and bonds required to cover general warehousing, plumbers and drain layers' license, leases of Indian lands for mining purposes, carrying of the mails and printing for cities and States and supplies of every description for the United States and for cities and institutions.

The Agency Department has charge of the appointment and resignation of agents and attorneys, of agents' licenses, arrangement of their territory, appointment of sub-agents, preparation of powers of attorney, and qualifying under State and federal laws. One company has over four thousand agents, and it is estimated that there are about thirty thousand men in the employ of the various surety companies.

The Field Department has general oversight of all the agency force, particularly the personal inspection of the management in the larger cities, and has under its direction a corps of special agents or inspectors who visit at intervals the agencies and sub-agencies to audit their accounts and of any fiduciaries in their territory. They also instruct the

agents in their duties, as well as personally solicit business at the agencies visited.

The Department of Publicity and Advertisement, joined with that of Supplies, has in charge the modern, up-to-date advertisement required to keep the agents of the company and the public, generally, thoroughly well educated as to the needs of the business and its extension into all departments of modern business. Several of the companies issue monthly journals as a medium of instruction to their representatives, and to create and continue interest in the varying phases of the business.

One of the most important departments of the entire organization is the Department of Claims, which has been styled the "Graveyard of Surety," for here all matters relating to claims against the company are referred and their settlement made. All questions concerning the liability of the company, of salvage, or of construction of contracts, are passed upon, and wise conservatism, legal knowledge and prudence is imperatively demanded.

We have given here, at some length, the sketch of the organization of modern surety companies to demonstrate the necessity of having trained experts in charge of its affairs, specialists whom study and experience qualify to exercise promptly trained judgment and make wise decisions.

The forms and blank applications, references and bonds, are a most important division of surety assurance. These forms have been passed upon by eminent counsel, and their phraseology has been the subject of many decisions in the courts. Sometimes those desiring surety insist upon the companies using forms prepared by themselves, notably the American Bankers' Association, who have prepared a form which they insist upon in bonding bank employees. The

companies have consented to write this bond reluctantly because it is not equitable, but they are always willing to evince their desire to meet the public halfway in its restrictions upon surety.

The modern system of corporate surety has led to many decisions by the courts in passing upon questions brought for adjudication, which are so novel as to merit the statement that a new jurisprudence has arisen upon the subject. The courts are holding the companies to a stricter interpretation of their contracts than it did those of personal surety, for in the latter case they seemed governed by the feeling that surety given as an act of personal friendship or favor, without any pecuniary recompense, should not be as strictly construed as one written by a corporation regularly organized to issue such surety, and which is paid what is deemed a sufficient rate or premium for assuming the hazard. Realizing the strictness of construction and the manifest tendency to hold the companies for any default or breaches under their bonds, they, in turn, are compelled to insist upon a stricter performance of the letter and spirit of their obligations upon the insured. A contract of surety must perforce have at least two parties thereto. The surety agrees to do certain things under given conditions; the assured to maintain practically these conditions during the term for which surety is given. Such conditions are: Frequent checking of the accounts of the assured, the exercise of usual safeguards as to defalcation, and the immediate notice of loss, no matter how small. There was a case in which the cashier of a mercantile concern was discovered to be short in his accounts several hundred dollars, which fault was condoned and the amount permitted to be repaid from his salary. Some time after a claim was made for a large sum upon the surety, for the habit of speculation had grown, and its indulgence

had made the appropriation of further funds necessary. The assured should have promptly notified the surety at the time of the commission of the first offense, in accordance with the terms of the bond. In a New England State the president and directors of a bank certified in writing, in addition to the usual printed form, that the accounts of the bank were in perfect shape and its funds intact, and yet a few months after, they reported a default which had clearly occurred years before the issue of the bond. Despite this the court held the company in full penalty of \$25,000, and the surety was severely criticised for even contesting the claim. There was also a case where claim was made upon surety on the bond of another bank cashier. Investigation promptly made by the surety company developed the fact that the defaulting cashier was still in the employ of the bank; that the bank would not enter charges against him, that criminal proceedings might be had; that they had nothing definite against the man save that the bank's money had been loaned on the bonds of a company in which the cashier was interested as manager and stockholder. It is small wonder that the surety company contested this loss. In contract guarantee very frequently there are changes made in construction, which practically vitiate the bond and compel the surety to take risks and made good extra expenses which should not have been permitted if the contract had been strictly held to.

The Legal Department of our subject is too large to make further incursion into it, nor do we understand that a paper upon our theme is to be made too technical to fail to interest students who are endeavoring to secure a general knowledge of the business of insurance.

The general results of the surety business in this country may be summed up in the observation, that the business is still in its infancy and will yet develop into a lusty giant

whose stature and girth no prophet can conjecture. Statistics show that less than 15 per cent. of all surety given is corporate surety, and even in what may be deemed the higher walks of commercial and financial life, the business is yet to be developed. The American Bankers' Association is authority for the statement that only 43 per cent. of the officers and employees of banks and trust companies are bonded. It is a matter of gratulation, however, that 98 per cent. of these bonds are corporate surety. "If these things happen in the green tree, what shall happen in the dry?" Is it any wonder that in the rural districts corporate surety is comparatively unknown? The ground has therefore only been scratched by the plowshare of surety endeavor; it will be further cultivated until the harvest shall be such as to surprise the most sanguine.

In the light of offering careers for coming men, we know of no more promising opening for men of university education who have trained their minds to form quick judgments upon propositions of law, ethics or philosophy, and who are willing to work earnestly and exercise patient perseverance. Men of address who can reason as well as talk, who can grasp the salient points of a situation quickly and turn them to advantage, will find in corporate surety opportunities to secure positions which will prove alike educational and lucrative.

GOVERNMENT INSURANCE

BY HENRY W. FARNAM

INTRODUCTION.

A complete survey of this field would involve treating it from a number of different points of view. Thus we might distinguish between the different kinds of government insurance:

(a) According to the risks for which indemnity is given, and distinguish fire insurance, life insurance, hail insurance, accident insurance, etc. This would be a mere duplication of the classification adopted for the earlier part of this course;

(b) According to the objects for which indemnity is given. We should thus distinguish house insurance, furniture insurance, live-stock insurance, etc.;

(c) According to the exclusiveness of the government business, in which case we should treat of insurance under government monopoly and of competitive insurance;

(d) According to the compulsion brought to bear upon the persons insured, in which case we should distinguish between voluntary and compulsory insurance;

(e) According to the incidence of the burden of insurance. In this case we should distinguish between insurance which is borne entirely by the persons insured, insurance which is borne by other classes of the population, and insurance which is supported by the state from the proceeds of general taxation. Or we might also have any combination of these cases, such as insurance partly borne by the insured, partly borne by the members of another class, and partly borne by the state.

Such a complete treatment would not only carry us far beyond the limits of time devoted to this subject, but it would also fail to emphasize what seems to be the typical feature of government insurance. And, while a complete historical treatment would involve considering all of these different kinds of government insurance, it seems wiser to concentrate the attention on certain elements and to refer only by way of introduction to the others.

Insurance has been stated by one of the lecturers to be in the nature of a tax. It is a payment made, not under legal compulsion, but under pressure, in order to guard against the consequences of a contingent evil. The converse is also within limits true. Many taxes are a kind of insurance. We pay money to support the police, the courts, the fire department, the army and navy, not because we expect to obtain a positive good from the expenditure of the money, but because we wish to be protected against a possible evil, such as the invasion of our property rights, the burning down of our homes, the attack of a foreign enemy.

The difference between the two lies not so much in the purpose as in the method of determining the amount of individual contributions. In insurance, the premium is based upon a mathematical calculation of the risk. The wooden house pays more than the brick house. In the case of taxes the payment is based upon some entirely different consideration, usually some criterion which is supposed to indicate the ability of the tax-payer, rather than his liability to call upon the government for some service. The strong man pays as much for police protection as the weak man, if his property is assessed at the same value. The rich, strong man may pay very many times more than the poor, weak man, even though he may be much less liable to call for the help, either of the police or of the fire department.

Inasmuch as many, though by no means all, of the functions of the government have so much analogy with the operations of insurance, it would seem to be a very natural thing that the government should go into the business, provided any advantage could be obtained. Among many that might be named there are two advantages in particular that deserve especial consideration:

(1) It may be that the government can command more skilful actuaries or a larger capital than private companies, so that it is in a position to carry on the business as a business with greater efficiency. This hypothesis would hardly apply to our country, and yet it is conceivably true in countries in which the civil service is of a higher grade and the average business man of a lower grade than in the United States.

(2) Another advantage to be gained from government insurance may lie in the fact that the government can make use of its taxing and of its governing power to carry it through. In other words, it need not conduct its business on actuarial principles exclusively. It can give certain classes benefits out of proportion to the premiums which they pay. In other words, it can combine the quasi tax of the insurance company with the real tax imposed by a sovereignty. If it decides to do this, it is not guided by merely commercial considerations. It hopes to influence the distribution of wealth. Moreover, it has one advantage which the insurance company does not enjoy—it can make its insurance compulsory. Thus not only may a real tax be used to pay for the support of insurance, but the premiums based upon actuarial principles may themselves become a tax collected by the authority of the state, and foresight may become compulsory.

What we have to consider in these lectures is, therefore, the effect on insurance, of whatever kind it may be, of this kind of government action. Conceivably this action might

be applied to any of the risks of life, fire, accident, superannuation, even unemployment. Practically it has been applied most extensively to the risks to which certain classes are especially exposed, and is known as Workingmen's Insurance.

To give even a brief history of governmental insurance schemes would carry us far beyond the limits of these lectures. What I shall attempt will be, first to sketch the history of earlier types of government insurance, then to describe in more detail and analyse critically the peculiar combination of tax and premium which I have just described. I shall not base my deductions upon any *a priori* grounds, but I shall endeavor to interpret as well as possible the most exact data which we have. These necessarily cover but a limited field, and a comparatively short time. I do not claim that we can expect any final, incontrovertible results, but I do believe that we have enough data to indicate some tendencies pretty strongly, and thus to pave the way for future and more conclusive investigations.

The prevalence of government insurance depends naturally upon the general policy of states. Those commonwealths which in modern times have tended to elaborate governmental functions in general are those in which we find the greatest prevalence of government insurance. Those, on the other hand, in which private enterprise has been given free scope are those in which government insurance is either entirely absent or reduced to a minimum. In the former class we find two distinct and in some respects antithetical types of government. On the one hand we find the paternal state, of which the ideal is a benevolent despotism—on the other we find the modern socialistic or semi-socialistic democracy. This is one of those numerous cases in which the extremes meet.

In tracing the history of government insurance it is no surprise to find that (barring such hybrid forms as were connected with the guild system, and which seem to carry the origin of insurance back to the thirteenth century and to distant Iceland) modern government insurance may be dated from the seventeenth century and had its birth-place in lower Germany and in Denmark. Thus there was at this time a governmental insurance agency against fire in Schleswig-Holstein, and another managed by the city of Copenhagen. In the eighteenth century similar insurance institutions arose in Brandenburg on the initiative of the Prussian government. Thus, in 1701 and 1705 several such village insurance agencies were established. In 1706 one was created in Berlin, and towards the middle of the eighteenth century others were established for various Prussian provinces and other German territories.

These agencies existed exclusively for insuring houses against fire and were generally compulsory. The object of introducing them was to prevent the impoverishment of whole villages by fire, and to help rural credit. The contributions were generally made on the principle of assessment, and it was not often that the risks were classified. From this beginning, public fire insurance, often compulsory, has become a common feature of the administration, especially in the states of Teutonic origin in central Europe. Thus, in 1897 there were thirty-four such public fire insurance agencies in Prussia, of which half insured buildings and movables, while the other half insured only buildings. There were twenty such institutions in other parts of the German Empire. There were seventeen in Austria.

While in most of these cases the state agencies do not enjoy any monopoly, and compete with private insurance companies, it is a very common thing to make insurance,

especially of houses, compulsory. This is particularly the case in the southern German states, Bavaria, Wurtemberg, Baden; also in Saxony and in parts of Prussia, particularly in the cities of Berlin, Stetin, Breslau, etc.

In Switzerland, while the federal government has the general supervision of private insurance companies, it has been left to the cantons to establish governmental insurance agencies. In 1898 there were seventeen cantons in Switzerland out of twenty-five which had cantonal insurance agencies for buildings, and two which extended the insurance to furniture. In most of these the institution is an old one. Fourteen out of the seventeen were established before 1820. The total amount insured under both heads was over 5,967,000,000 fr. or about \$1,193,000,000. In many of these cases insurance is obligatory.

While government insurance seems to have begun with fire risks, it has recently been extended to live stock, with the special object of securing peasants against loss through epizootics. The particular reason for turning over this kind of insurance to the government lies in the difficulty of estimating the risks, and of identifying the animals which die, as well as in the unequal distribution of risks, since an epizootic by its very nature tends to bunch the losses. There is also another advantage in making the government responsible for the losses. It is the only agency capable of enforcing on a large scale the sanitary regulations which are necessary to minimize those losses. Thus in Germany the matter was regulated by an imperial law of June 23, 1880, amended May 1, 1894, which was directed against the spread of disease among animals. This law left it to the individual states to provide indemnities for those whose animals were killed, and also to determine how the indemnity should be raised, and in most of them, as in Prussia under the law

of March 12, 1881, there is a yearly tax upon the owners of live stock which amounts to a kind of mutual insurance against epizootics.

Insurance against injury by hail is, like the insurance of cattle, important for the farmer, and similar reasons exist for putting it under the control of the state. This has, however, not been done to any considerable extent, excepting in Bavaria, where a state hail insurance department was organized in 1884, endowed with a guarantee fund of 1,000,000 marks (about \$250,000), and an annual subsidy of 40,000 marks (\$10,000). This department enjoys, however, no monopoly; it simply competes with private companies. Nor is insurance compulsory.

Government insurance against old age has been tried on a moderate scale in England as well as in France. As far back as 1771 a bill was introduced into the British Parliament to provide for old age insurance, but it was not carried, and no positive action was taken until 1833. The act passed in that year permitted the purchase of annuities, either deferred or immediate, of not less than £4 or more than £20 value. This was intended to provide for a kind of old age pension. It was at the time opposed, not only by the private insurance companies, but also by the friendly societies, and it was not until 1864 and 1882 that further acts were passed, making the system efficient. Under the present system immediate or deferred annuities for not less than £1 nor more than £100 can be purchased through a postal savings bank on the life of any person over five years of age. Persons between fourteen and sixty-five cannot be insured for less than £5. The cost varies with the age. Thus a man of twenty-four can, by paying annually 4s. 4d., purchase an annuity of £1 to commence when he has reached his fifty-fourth year, or he can obtain the same sum by the immediate payment of £3. 19s. 10d. This system has had comparatively meagre results.

In France the bank for old age pensions was established in 1850. Its benefits were similar to those offered in England. By paying 5 fr., or a multiple of this sum, one could obtain after a certain time a regular pension not exceeding 600 fr. Two forms of insurance were provided—one with alienated capital, the other with reserved capital. In the latter case the pension was lower, but, on the other hand, if the beneficiary died either before or after the beginning of the pension, all sums paid by him, less the interest upon them, were returned to his heirs. Some of the details have been changed by subsequent laws. The law of 1886 fixed 1,200 fr. as the maximum pension, and provided that the annual payments should not exceed 100 fr., excepting in the case of benefit societies. A law passed in 1893 provided that the maximum deposited in one year should be 500 fr. The results of this system have been somewhat disappointing. Very few working men are directly insured in this establishment. The bulk of the insurance is taken collectively by societies and employers for the benefit of others. The sum paid annually by individuals has shown but a slight increase from year to year and has often fallen off. Thus for the year 1889 it was 9,500,000 fr.; in the year 1900 it was 8,235,000 fr., while collective deposits in 1900 were over 42,000,000 fr.

Of the new depositors in 1900, numbering in all 10,402, 6,502 were minors without profession, 1,033 were persons who belonged to the liberal professions or other members of the middle class. The working men proper, including domestics, only numbered about 1,428.

Since 1868 two other forms of government insurance have been introduced in France—one for accidents, the other for death, but comparatively little use has been made of either. The total receipts of the insurance agency against accidents in 1901 amounted to only 1,140 fr., paid by 251 persons. The use

of the life insurance bureau has likewise been small. From 1868 to December 31, 1900, only 2,976 persons had been individually insured. The total amount of the individual insurance in 1900 was 74,000 fr., of collective insurance 169,420 fr.

Governmental life insurance has been developed in recent times in New Zealand. Facilities for life insurance being poor in the early days of the colony, it was proposed by Sir Julius Vogel that the want should be supplied by the state, and a law was accordingly passed which created a life insurance department in 1870. It began on a small scale with but 463 clients. In 1900 it had 40,368 policies outstanding, and did nearly half of the life insurance business of the colony. Of the total insurance of £22,000,000, the state insurance department had placed £9,697,000. It is said that the New Zealand people carry more life insurance per capita than those of any other country, the average amount for every European inhabitant of the colony at the end of 1900 being £29. 17s. 3d., or about \$145. Accident insurance by the state was introduced by an act passed in 1899. In both of these cases the government insurance is neither a monopoly nor obligatory, but simply enters the field in competition with private corporations in order to supply a want.

Except for the annuity system mentioned above, England and the United States have not formally entered the field proper of governmental insurance. Yet, in our marine hospital service we have something closely allied to government insurance under another name. Sailors who fall sick or are injured on vessels sailing under the United States flag are entitled to be cared for at government expense, but are required to submit to a certain deduction from their wages, which corresponds roughly to an insurance premium.

This sketch of government insurance is obviously made up of fragments. Different conditions have led in some coun-

tries to the use of one kind, in some countries to the use of another. In some few cases insurance has been compulsory, in most cases it has been voluntary. Nor has government insurance in any of the instances cited been carried out on a sufficiently large scale to furnish us with valuable experiences. Within the past twenty years an entirely new set of government insurance agencies has entered the field. Beginning with Germany, a number of governments have boldly taken up the subject of workingmen's insurance. They have given it a compulsory character. They have aided it by subventions from the treasury, and, while they have not in most cases retained an absolute monopoly of the business for themselves, they have actually taken charge of the greater part of it. Moreover, as this whole mass of legislation has come into existence in an age which hungers and thirsts for statistics, unusually complete records have been preserved and published. We, therefore, have an experience which enables us to test the essential features of government insurance, and, while the experience is not long enough to justify us in reaching confident generalizations, it does supply us with much instructive material.

The beginning of modern workingmen's insurance is to be found in Germany. This is no mere accident. We have seen how at an early day fire insurance was introduced by the public authorities, and was made compulsory in that country, and for several centuries the German states have been pre-eminently the states of a paternally active administration. There were some special reasons, however, which brought about the introduction of compulsory workingmen's insurance in the ninth decade of the nineteenth century.

(1) Germany has been the nursery of modern scientific socialism. For many years after the death of Lassalle and the exile of Marx, socialism partook largely of a theoretical and

revolutionary character. The formation of the German Empire in 1871, which brought with it universal suffrage, also brought the first socialist member of parliament, but he sat alone in the parliament of 1871. In 1874 the number had increased to nine, while in 1877 there were twelve, representing a constituency of 493,000. In 1878 two attacks were made upon the life of the emperor. He escaped without injury from the first; in the second he was seriously wounded, though he ultimately recovered and lived for ten years longer. There was no proof that either of the would-be regicides had any connection with the socialist party. Indeed, the second one had lately been acting as colporteur for the Christian Socialist Party, whose chief article of faith was its loyalty to the church and to the monarchy. But Prince Bismarck thought the occasion a good one to strike a blow at the Social Democratic Party, and, after the dissolution of the parliament and a new election, succeeded in carrying through in 1878 a law which gave to the police the power to suppress newspapers, confiscate books, and close associations and meetings aiming at the subversion of the state. In the twelve years of the existence of this law 2,716 prohibitions were issued. Its first effect was to temporarily break up the regular organization of the party, and only nine socialists were returned to parliament in 1878. But in the next election their number rebounded to twelve, and in the election of 1884 it had grown to twenty-four. It was clear that mere suppression was not effectual against this party. Prince Bismarck decided, therefore, boldly to take the wind out of its sails by introducing a series of measures calculated to do as much for the working classes as the socialists themselves could have promised. There was, therefore, a strong motive of practical politics for introducing these measures at that time.

(2) This movement was aided by the newer tendencies of economic thought in Germany. With the formation of the

Empire came a greater aversion to following in the footsteps of English economists, while the introduction of the historical method of research, not only in law, but also in economics, gave scholars a new appreciation of the efficiency of the government in the economic development of Germany. The movement of thought is illustrated by two votes passed by the *Verein für Social Politik*, which had been formed in 1872 in order to discuss questions of practical economics, and in which most of the professional economists of Germany were enrolled. In 1875 the question of compulsory insurance for invalidity and old age was discussed, and the vote stood 28 to 11 against compulsion. In 1882 a similar question was again brought up, and the vote was in favor of compulsion for accident and sick insurance, though against the immediate introduction of insurance for invalidity as well as for widows and orphans. The more advanced thinkers among the German economists were moving steadily towards the idea of compulsory insurance.

(3) Another reason for at least insurance against accidents lay in the failure of the employers' liability act of June 7, 1871, and in the feeling that industries should bear the burden of their own accidents without the litigation and ill feeling connected with suits for damages.

The elaborate legislation for compulsory insurance which Germany adopted was, therefore, not an isolated experiment or merely a shrewd political move. It grew naturally out of the political, economic and social situation which existed in Germany during the decade following the formation of the Empire, and it, in turn, has stimulated a movement towards so-called socialistic measures, which has shown itself more or less in almost all of the advanced industrial countries of the world during the last quarter of a century. In no country, however, could such a radical and extensive scheme have

been carried out so successfully as in Germany, with its corps of highly trained officials, its habits of obedience, and the most powerful political figure of the nineteenth century for its chancellor. The legislation is so extensive and so complicated that even a summary of its main provisions would occupy more time than is allotted to the whole subject. Fortunately the details of the law are easily accessible not only in the voluminous German literature on the subject, but also in works published in the English language, and I shall, therefore, content myself with bringing out the salient points which are characteristic of the governmental features of the laws.*

The first bill, providing for accident insurance, was submitted to parliament early in 1881, but was rejected. When the House convened November 17, 1881, it was greeted with a message from the emperor which created a profound impression, and in which he expressed his desire to leave behind him to the Fatherland "New and lasting pledges of its internal peace, and to the needy greater certainty and abundance of the assistance to which they have a claim." This message, which came as a kind of a political testament of the venerable emperor, created a strong presumption in favor of compulsory insurance. A new bill for accident insurance was introduced as well as a bill for insurance against sickness. The latter, which was the first to be passed, was published June 15, 1883, and went into effect December 1, 1884. The

* See Fourth Special Report of the Commissioner of Labor on Compulsory Insurance in Germany, by Dr. John Graham Brooks, Washington, 1895; W. F. Willoughby: Workingmen's Insurance, 1898; Report of the Industrial Commission, Vol. 16, pp. 228-241, Washington, 1901. Most of the statistics quoted are taken from the following official publications: Lass und Zahn, *Einrichtung und Wirkung der Deutschen Arbeiterversicherung*, 1900, a volume prepared for the Paris Exposition of 1900; *Die Deutsche Arbeiterversicherung; als Soziale Einrichtung*, 1904, a volume prepared for the St. Louis World's Fair of 1904.

accident insurance bill was passed July 6, 1884, and went partially into effect upon its proclamation, though it was not put fully into operation until October 1, 1885.

Both laws have been repeatedly amended, mainly by laws which have extended or liberalized their provisions, but their fundamental principles have not been altered. The first formal bill for the insurance against invalidity and old age was brought before parliament in 1888, and published July 22, 1889. The provisions with regard to the machinery of insurance were to go into effect at once. The beginning of its business operations was left to imperial ordinance and was finally set for January 1, 1891.

Thus in less than ten years the three-fold plan for caring for the working classes' was carried through and put into operation.

I. The sick insurance law applies to all cases of sickness, regardless of cause, and to practically all persons employed for wages in any of the mechanical trades or in commerce, as well as to some of those engaged in agriculture. At the end of 1901 there were over 10,000,000 persons who were subject to its provisions. It also applies to ordinary laborers and even to those occupying an official position as far as their salary is less than 2,000 M. or \$500. Of the occupations to which the law applies, some are unconditionally subject to it, others conditionally. The principal trades in which the compulsion is general are railroading, mining, manufactures, internal navigation, commerce, the telegraph and postal service, navigation in harbors, etc., though regular seamen are provided for by a special law. Its provisions can, however, be extended by ordinance to certain other classes. Exemptions are allowed for certain classes, such as soldiers and public servants, whose office entitles them to support in sickness, and in some other cases on special appli-

cation. Voluntary insurance under this head is also permitted to certain classes of persons to whom the compulsory character of the law does not apply, and those who have passed out of an occupation subject to the law are allowed to continue their relations to the insurance agency in which they were inscribed.

The organization of the sick insurance seems at first sight very complicated, since there are no less than eight different kinds of organizations which may be within the operation of the law. The object of this was to adapt compulsory insurance as far as possible to existing institutions, and to the needs of different classes of the people. The following table gives a summary of the number and membership of the different classes of societies concerned in 1901:

	Societies.	Members.
1. Local Sick Insurance Agencies.....	4,663	4,550,235
2. Establishment Sick Insurance Agencies.	7,480	2,496,743
3. Building Sick Insurance Agencies.....	57	15,791
4. Guild Sick Insurance Agencies.....	613	203,809
5. Registered Benefit Societies.....	1,431	864,978
6. State Benefit Societies.....	228	45,062
7. Municipal Associations	8,112	1,465,124
8. Miners Associations	186	677,822
	<hr/> 22,770	<hr/> 10,319,564

The benefits which are given must come up to a certain minimum, which must supply:

(1) Free medical attendance and medicine from the day of sickness;

(2) A regular allowance beginning with the third day after the sickness has shown itself.

As a rule this sum is equal to one-half of the rate of wages upon which the premiums are based, and it may be given for thirteen weeks. A number of variations are, how-

ever, permitted, such as care in a hospital, which may be substituted for medical attendance, allowance, etc. The funds are supplied normally by the insured person and by the employer jointly—the latter contributing one-third of the premiums, the former two-thirds, but the total amount is advanced by the employer, who indemnifies himself by deducting the share of the insured from his wages. In general the contributions range from $1\frac{1}{2}$ to $4\frac{1}{2}$ per cent. of the normal wages.

II. Insurance against accident covered from the beginning a large number of different people, and its scope has been considerably extended of late years, a late amendment, which was passed in 1900, actually going so far as to include convicts in prison.

In 1902 over 17,000,000 persons were insured against accident, or about 30 per cent. of the entire population of the German Empire. They include, not only industrial employees and those engaged in railroading and internal navigation, but also those engaged in agriculture, forestry, and all kinds of building operations. The organization of this form of insurance is quite different from that of the sick insurance. It rests entirely upon so-called professional associations, in which the insured are grouped according to their occupations. These associations, of which there were 114 in 1902, are virtually unions of employers who are leagued together as far as possible according to the character of their industry. In some cases one association extends over the entire Empire, as in the case of the Iron and Steel Association. In other cases they cover but a limited territory. Each one is, however, in the main self-governing. It elects its own officers and manages its own affairs, subject to the general provisions of the law. The benefits given are in general of two kinds:

(1) In the case of injury, the benefits begin with the fourteenth week, inasmuch as during the first thirteen weeks

the injured person is cared for under sick insurance or, failing that, at the direct expense of his employer. Beginning with the fourteenth week he is entitled under accident insurance to the cost of medical attendance, medicine, etc., and to an allowance to continue during the period of his disability. The amount of the allowance is graded according to the severity of the injury, two-thirds of the normal wages being usually given in the case of total disability.

(2) In the case of death, the expenses of burial are to be paid, and an annuity given to the widow until her death or remarriage, or to the children.

The entire expense of accident insurance is borne by the employers, excepting in as far as the injured person may be a contributor to a sick insurance fund on which his care during the first thirteen weeks rests. The funds are raised according to the assessment principle, that is, the expenses of each year are apportioned among the employers who are subject to the insurance law. The rate of apportionment depends partly upon the amount paid in salaries and wages, and partly upon the risks of the employment. There are, however, some exceptions to this general rule.

III. Insurance for invalidity and old age applies in general to persons engaged in agriculture and industry, in trade, domestic service and public service. It also includes officials, provided their salary is not over 2,000 marks. Certain other persons may take advantage of the law, but without compulsion, while certain persons in the enumerated classes are exempt either by law or on their own application. The former exemption applies mainly to persons who are entitled by virtue of their occupation to a pension, the latter to persons who are already over seventy, or who do not work regularly for wages. The organization of the insurance differs radically from that of both of the other systems. It is in charge

of an imperial bureau which has its subdivisions scattered over the country. For this purpose Germany is divided into thirty-one districts, each with its insurance department. In general the place of a person's occupation determines the district in which he is insured. It was estimated that in 1900 about 12,000,000 persons enjoyed the benefit of this form of insurance. The benefits are two-fold:

(1) An invalidity pension which is given without regard to age to those whose earning capacity is reduced to less than one-third of the normal.

(2) An old age pension to which every one over seventy years of age is entitled whether infirm or not, provided he has complied with the general conditions of the law.

The principal of these requirements is that the applicant must have been a contributor to the fund for an aggregate of one thousand two hundred weeks, or twenty-four years. The benefit consists in both cases of a uniform contribution of 50 marks (about \$12.50) per year from the Empire, and of an additional sum which depends upon the wage class of the recipient and upon the length of time during which he has contributed. The beneficiary is entitled to have a part of his contributions refunded on certain conditions:

(a) In the case of women, one-half is refunded upon marriage.

(b) In case accident insurance provides for the insured, he may likewise receive back one-half.

(c) In case the insured dies before the beginning of the pension, the surviving wife or husband may receive one-half of the amount contributed.

Excepting for the uniform subsidy given by the Empire, the cost of the insurance is divided evenly between the employer and the employed, but is advanced by the former. The financial principle under which the rates are fixed differs,

however, from that which applies to either of the other insurance systems. The premiums are based upon the principle, that each one is to contribute on the average the capital out of which his own allowances are paid. In the beginning this rate was determined provisionally for a period of ten years, but as it was found that the rates were sufficient for the permanent requirements of the system, they were definitely fixed by the amendment of 1899. As a transitional measure, it was provided that persons over forty years of age when the law went into effect, if they had been occupied in one of the dutiable employments for three years previous, should have the term normally fixed for their contributions shortened by as many years as their age exceeded the age of forty. Thus a person fifty years of age, instead of being obliged to contribute for twenty-four years, would only be obliged to contribute for fourteen.

The enactment and successful execution of the German insurance laws led to a rapid extension of the system in other parts of the world. The first state to follow the German example was Austria, which provided for compulsory accident insurance in 1887, for sick insurance in 1888, and for miners' insurance in 1889. Hungary passed a law for sick insurance in 1891. Norway passed a law for accident insurance in 1894, modeled somewhat after the German plan. Sweden, after considerable discussion, accepted in 1901 a law according to which the employers must either give compensation for accidents, or must insure their employees. In 1901 Holland passed a law providing for compulsory insurance against accidents, and even distant Iceland adopted in 1890 a scheme for insurance against invalidity and old age.

In December, 1903, the new Belgian law on accident insurance was published, which, however, is more in the nature of workmen's compensation than of insurance, though it amounts

in some of its features to an indirect insurance, and there was a strong pressure in the Chamber to give it the character of insurance.

A number of states which have not formally adopted a scheme of workingmen's insurance have passed laws which are intended to give somewhat similar benefits. Thus Italy, in 1898, passed a law requiring certain classes of workingmen to be insured against accident at the expense of their employers. England adopted, in 1897, a workmen's compensation act, and New Zealand adopted in 1898 a scheme for old age pensions, which provided for the payment of pensions out of the general revenue of the government without any contributions by the beneficiaries. In the United States the State of Maryland adopted in 1902 a species of accident insurance, and a workman's compensation law has recently been recommended by the Massachusetts commission on labor legislation.

It is quite evident that we have entered upon a new era of government insurance within the past twenty years, and it cannot, therefore, be futile to examine as carefully as we can the workings of this form of insurance as far as we can trace them. What an enthusiastic German author calls the triumphal progress of workingmen's insurance has, however, not been without some setbacks, and it is remarkable that the most serious of these reverses has occurred in Switzerland, which has otherwise shown a great readiness to adopt radical measures for the benefit of the working classes. Under the Swiss constitution, as originally adopted, the federal government could do nothing in the way of workingmen's insurance. An amendment was accordingly adopted in 1890, by a popular vote of about three to one, in which it was provided that "the Confederation shall by means of legislation provide for sick and accident insurance, having regard to the existing sick

clubs. It can make membership either generally or for special classes obligatory." After considerable debate two bills—one for sick insurance, the other for accident insurance—passed the federal legislature, but, upon a demand being made for a referendum, a vote was taken May 20, 1900, and the whole plan was rejected by 337,000 to 147,000 votes, the majority against these specific bills being greater than the majority of ten years earlier in favor of the general scheme. This vote is all the more remarkable in view of the fact that Switzerland has done more than any other country for insuring the unemployed, two of the cantons, Bern and St. Gallen, having been the pioneers in the introduction of this form of workingmen's insurance.

OPERATION OF COMPULSORY WORKING-MEN'S INSURANCE IN GERMANY

BY HENRY W. FARNAM

INTRODUCTION.

It was explained in the beginning that government insurance, which is supported in whole or in part by taxation or by the contributions of others than the beneficiaries, is not insurance in the strict sense of the word. It is an institution which, while having the form and the immediate purposes of insurance, partakes, as regards its ultimate ends and the means by which it is carried into effect, of social legislation. This is clearly understood in spite of some differences of opinion by German authors. One of the first authorities on the purely legal side of the institution, Professor Heinrich Rosin of Freiburg, says that, in spite of the official designation, the great workingmen's insurance institutions cannot be properly classified as insurance. "We are not dealing," he says, "with a single two-sided legal relation, but with two one-sided relations. Of these, one, which is the principal, provides for the working classes assistance on the part of the state; the other, which is secondary and does not necessarily stand in legal connection with the first, has to do with the raising of money by contributions levied from certain persons." *

While, therefore, the subject might be an interesting one to consider from the point of view of technical insurance questions, its chief interest lies in its social operations, and

* Das Recht des Arbeiterversicherung, Vol. 1, p. 257.

it is, therefore, from that point of view alone that I shall consider it. Partly for the sake of simplicity, and partly on account of the fulness of the data, I shall confine my analysis to the German laws, although the indications are that the experience of Germany is repeated elsewhere under similar conditions. In the famous message of the Emperor which has already been referred to, we read that "the cure for social maladies is to be found not exclusively in the repression of social democratic excesses but equally by means of the positive promotion of the welfare of laborers. The Fatherland should, therefore, receive new and lasting pledges of its inner peace, and those who are in need should receive greater certainty and abundance of help." Similarly in the preamble to the law for accident insurance, which was presented to the Parliament in 1881, it is stated: "That the state should consider its needy members more than hitherto is not only a duty of humanity and of Christianity which should permeate such institutions, but is also a duty of state preserving policy which is to follow the aim of cultivating among the non-property-owning classes of the population, who are at the same time the most numerous and the least educated, the view that the state is not only a necessary but also a beneficial institution. To this end they must be brought by means of directly recognizable advantages which are given them by legislative measures, to conceive of the state not only as an institution invented for the protection of the better situated classes of society, but also as one which serves their needs and interests." The present Emperor expressed himself in similar terms in 1888 when the bill for invalidity and old age insurance was presented.

Every attempt to influence the structure of society or the distribution of wealth by legislation is like a surgical operation. As soon as the knife is applied, it is liable to produce

results different from those which were contemplated, and sometimes decidedly antagonistic to them. In endeavoring to analyze the operation of this legislation, therefore, I shall distinguish the direct and intended results, from those which are incidental and indirect, and I shall furthermore distinguish the strictly financial and economic results which are, as it were, but a means to an end, from the social results which are the real and ultimate purpose of the legislation.

At the time of the Paris Exposition of 1900 the German Government sent as a part of its exhibit a huge, gilded obelisk some forty-five feet in height, which was intended to represent gold of the value of the total amounts paid to the beneficiaries of the insurance laws from 1885 to 1899. This would have weighed 960,000 kilograms, and represented a value of 2.4 milliards marks, or about \$600,000,000. The touch of self-glorification which this obelisk incidentally exhibited should not blind us to the extraordinary results which it was intended to illustrate to the eye. From that time to the present the operations of the insurance laws have continued to grow, although it is difficult to get very recent official figures. The publication of the statistics of sick insurance for 1901 by the Imperial Statistical Bureau not having been received until March, 1904, most of my statistics are not very fresh, and yet they cover sufficient ground to show tendencies, and it is hardly likely that their lessons would be modified if our figures came down to 1903.

It is difficult to get a concrete idea of what was involved in this enormous undertaking. The total amount paid for all branches in the years from 1885 to 1897 amounted to over \$727,000,000. Of this sum the employees contributed about \$327,000,000; the employers about \$326,000,000. It is clear, therefore, that through this elaborate organization the govern-

ment has succeeded not only in turning a stream of wealth, enormous in the aggregate, into the pockets of the working classes, but in drawing this stream in about equal portions from the employers and the beneficiaries themselves.

It has done this at a cost which is on the whole not excessive. The total cost of administration during the period from 1885 to 1897 was but 10.1 per cent. of the total expenditure, but there has been a tendency downward. Thus in 1900 the cost of accident insurance was but 9 per cent., of invalidity and old age insurance 6.4 per cent.*

It might, perhaps, be supposed, and there are some economists who would consider this a necessary deduction from the wage-fund theory, that the rate of wages would have fallen during the same period on account of the burdens resting upon the employers, or, if not, that German industry would at least have suffered a severe blow. Neither of these results appears to have taken place. The period covered by insurance has been on the whole a period of great prosperity for German industry, at least down to the depression of 1901. It has not prevented the growth of large establishments, as is shown by the following table:

	Establishments.		Persons.		Increase or Decrease.	
	1882.	1895.	1882.	1895.	Estab.	Pers.
Independ. workers.	1,430,465	1,237,349	1,430,465	1,237,349	-13.5	-13.5
Small establishments (2-5 pers.).	745,392	752,223	1,839,939	1,953,776	+ 0.9	+ 6.2
Medium establishments (6-50 pers.).	85,001	139,459	1,109,128	1,902,049	+64.1	+71.5
Large establishments (over 50 p.).	9,481	17,941	1,554,131	2,907,329	+89.3	+87.2
	2,270,339	2,146,972	5,933,663	8,000,503	- 5.4	+34.8

* Pinkus in *Yale Review* for February, 1904, p. 375.

International trade has progressed at such a rapid rate as to put Germany in the second rank among the great states of the world. From 1882 to 1898 she passed France and was still ahead, in that year, of the United States, as shown by the following table, giving the percentage of the world's trade enjoyed by the leading nations:

	1882.	1885.	1890.	1895.	1898.
Germany	10.3	10.1	10.9	10.8	11.3
France	11.1	10.2	9.7	8.4	8.3
Great Britain	19.7	18.8	18.4	17.4	16.8
United States.....	9.9	9.5	9.9	9.2	9.7

Wages appear to have risen during this period. German wage statistics are not very satisfactory, but there are several indications that the compensation of labor has gone up. We find, for instance, that the scale of wages, which is taken as the basis for computing premiums in accident insurance, has risen between 1888 and 1898 from an average of 612 to 735 marks. The average contributions to invalidity insurance, which are based upon the rate of wages, have likewise risen between 1891 and 1898 from a weekly average of 20.81 m. to 21.55 m. The income tax statistics of Saxony also have an indirect bearing upon this. They show an average income for the population in 1878 of 323 marks, in 1888 of 399.6 marks, in 1898 of 507.2 marks.

The figures also indicate that, while there has been a falling off in the proportion of smaller incomes under 800 marks, there has been a large increase in the proportion of moderate incomes running from 800 to 3,300 marks. The general well-being is also indicated by the per capita increase in the consumption of beer, sugar, coffee, meat, etc. These figures are

confirmed by the general observation of the difficulty of getting domestic servants, the migration of people into the cities, and the consequent scarcity of farm laborers.

Besides the direct transfer of wealth which was intended by the insurance laws, there has been incidentally a great accumulation of capital. A report just published by the Imperial Insurance Office, and carrying the figures down to December 31, 1903, shows that in the single year 1903 the capital invested by the insurance offices in various public works was not less than 42,825,599 marks, or over \$10,000,000, while the entire sum thus applied since 1884 was 336,851,529 marks, or about \$84,000,000, and this only represents a part of the entire capital of the insurance bureaus.

The purposes to which this capital has been applied are extremely varied. Thus not less than 67,000,000 marks (about \$17,000,000) have been applied to farm loans, narrow-gauge railroads, the improvement of highways, the improvement of live stock, etc. Some 148,000,000 marks (\$37,000,000) have been used for building hospitals and other institutions for the sick or the poor, etc. A very large sum has been used for workingmen's dwellings—no less than 118,000,000 marks (\$29,000,000) being used for this purpose.*

Great improvements have also been made in the introduction of safety appliances and sanitary measures. Thus accident stations have been established in Berlin by the accident insurance associations to minimize the cost of accidents which has to be borne by the employers. These places are equipped with bandages, splints and other such surgical appliances, and have physicians on call, both for day and night service. The manufacturers' associations have taken pains to introduce strict rules with regard to the handling of dangerous goods, the introduction of life-saving apparatus, etc. Safety eleva-

* Summary in *Soziale Praxis*, February 18, 1904, p. 548.

tors are more generally provided than formerly, the oiling of machinery is being done automatically instead of by hand, the belting is being adjusted by means of a handle, machinery is being fenced in, and premiums are sometimes paid for the rescue of the injured. In order to secure the execution of these regulations some associations have established a regular inspection service. In 1899 there were fifty-six associations which had united in such a service and employed two hundred and eight persons.

While accident insurance has provided safety appliances, sick insurance has promoted hygienic regulations. In Munich one of the local sick insurance bureaus has induced the storekeepers to give their employees means for sitting down, a noon day rest, and other advantages. Lectures on hygiene have been given in a number of cities, particularly regarding tuberculosis, dust diseases, etc.

The death-rate has fallen steadily in Germany. In 1885 it was 27.2 per thousand, in 1898 it was 21.8. In the three charity clinics of Berlin the mortality due to consumption fell from fifty-four in 1889-1890 to thirty-four in 1898-1899. All of these figures are taken from official reports, and most of them from the book prepared by the German Government for the Paris Exhibition of 1900, and quoted as "Lass und Zahn."

It was clearly stated at the beginning that the object of the insurance laws was to counteract the dangerous tendencies of the social democrats, and to preserve inner peace, by which was probably meant industrial peace. And it was also expected, though this was not so clearly brought out, that insurance would be substituted for and thus ease the burden of poor relief. Let us consider these points one by one.

(1) The political effect on the growth of the social democratic party.

This matter can be dealt with by a very simple table showing the results of successive parliamentary elections from 1871 down to the present:

	Socialist			Socialist	
	Voters.	Members of Reichstag.		Voters.	Members of Reichstag.
1871.....	101,927	1	1887.....	763,128	11
1874.....	351,670	9	1890.....	1,427,298	35
1877.....	493,447	12	1893.....	1,786,738	44
1878.....	437,158	9	1898.....	2,105,305	56
1881.....	311,961	12	1903.....	3,010,472	81
1884.....	549,990	24			

This table shows that from 1881 to 1903 the number of socialist representatives has increased from twelve to eighty-one, nearly seven-fold, so that they now constitute the second strongest single party in the Imperial Parliament. The strongest party is the clerical party, with one hundred members, which is more or less hostile to the government. One remarkable feature of the last election was the increase in the percentage of people who voted. (Adolf Braun in *Braun's Archiv.* for 1903, p. 540.) Another was the remarkable increase in the vote cast for the social democratic party. As a means of suppressing socialism, insurance laws can hardly be considered a brilliant success. It is true that there has been a considerable change in the character of the party. It is less than it formerly was a party of revolution, it has even ceased to be a party of opposition pure and simple, and in some of the more recent amendments to the insurance laws it has at least negatively favored the government measures. How far this is due to the sobering effect of that responsibility which comes with numbers, how far it is due to a change in the theoretical views of the younger socialists, how far it is due to an actual feeling of friendliness towards the existing parties, it is

impossible to say, and any discussion of this matter would carry us beyond the limits of our subject. But the opposition of the socialists is still so strong that they declined at the last election to be represented in the vice presidency of the parliament, because they did not wish to have their representative go through the formality of calling upon the Emperor.

(2) Social Peace.

A good deal of stress is laid in the official history of the insurance laws upon their conciliatory effect in creating a better feeling between employers and employed. Officially the conditions are described as almost idyllic. "With the improvements in the material and social position of the workingmen which have been introduced through workingmen's insurance there is a spontaneous increase in their pleasure in work, and at the same time in the quality and amount of their product. Therefore the employers are in general quite willing to bear the heavy burdens in money and voluntary service."* We are told that, in addition to the burdens of insurance placed upon them by law, many employers have voluntarily introduced additional benefit features for their employees. Thus in 1898, 103 joint stock companies, 90 private employers and 48 other persons spent 27,000,000 marks for the benefit of their employees, while in 1899 the amount contributed by 625 joint stock companies and 349 private persons reached the sum of 39,000,000 marks.† Individual examples, such as are found in the establishment of the General Electrical Company of Berlin, in the famous steel works of Krupp in Essen, etc., are not unfamiliar to readers in this country. "This social activity," we are told, "which the employers are unfolding under the standard of our new social legislation, cannot fail in the long run to produce a conciliatory reaction upon the differences existing between employer and

* Lass und Zahn, p. 223.

† Lass und Zahn, p. 224.

employed. A mutual understanding is also furthered by the common consultations and meetings in which the working-men's insurance unites employer and employed."* It is difficult either to prove or disprove a general statement of this kind, but there are some facts which seem at least to cast doubt upon the conclusions just quoted. That the employers have done a great deal for their employees in Germany is undoubtedly true; that this activity is due to any large extent to the insurance laws may well be questioned. It is certainly a fact that Krupp voluntarily introduced vast schemes for the welfare and insurance of his men long before government insurance was thought of. It is likewise true that in other countries such as England, France and the United States, where no such insurance exists, brilliant examples of this far-sighted interest in the workers on the part of large corporations and large individual employers can be found. In our own country, for instance, the Colorado Fuel and Iron Company has established a regular sociological department which publishes a weekly magazine and superintends very extensive educational and social advantages provided for the people on the company's payroll. It would, therefore, be a mistake to attribute this exhibition of social activity entirely or in large degree to the compulsory insurance laws. It would also seem as if the statement regarding the good will existing between employers and employed in Germany was hardly borne out by the few statistics which are available for this purpose. Generally speaking, it is true that the sentiments cannot be measured by the statistical method, but when sentiments take shape in action, the actions can be counted and furnish at least a rough index of the prevalence of the sentiments. Any ill feeling between employers and employed is in modern times pretty sure to result sooner or later in strikes, and strike statistics have been collected with more or less regularity in Germany since

* Lass und Zahn, p. 225.

about 1890. In 1889, shortly after the new laws had gone into effect, there occurred a notable strike among the miners of Western Germany, in which it is said that about 90,000 persons took part. In 1891-1892 there was a very general and disastrous strike of the printers, which ultimately led to a complete change in the character of the principal printers' union. This union had previously been noted for its conservative and peaceful character, but has now become almost entirely identified with social democracy. Another great strike was that of the Hamburg dock laborers in 1896-1897, in which over 16,000 persons took part. A significant fact is that in 1897 a special insurance company called "Industria" was formed with a capital of 5,000,000 marks, with the special province of indemnifying employers for losses through strikes. Instead of government insurance abolishing or even checking the strike fever, the strikes themselves had led to the development of a new branch of insurance. One might enlarge indefinitely upon the subject of strikes. The following table, which is not altogether uniform and therefore not very satisfactory, will, however, indicate that strikes still have their ups and downs, and that the tendency throughout the years seems to be more upward than downward:

STRIKES IN PRUSSIA.

	No. of Strikes.	No. of Strikers.
Summer of 1890.....	216	28,643
Winter " 1890-1.....	71	6,573
Summer " 1891.....	118	25,100
Winter " 1891-2.....	99	7,787
Summer " 1892.....	99	7,878
Winter " 1892-3.....	116	55,882
Summer " 1893.....	74	4,070
Winter " 1893-4.....	48	2,835
Summer " 1894.....	127	9,764
Winter " 1894-5.....	71	3,861
Summer " 1895.....	189	6,365
Winter " 1895-6.....	606	17,349
Summer " 1896.....	304	51,309
Winter " 1896-7.....	158	16,181
Summer " 1897.....	285	25,398
1899.....	835	58,931
1900.....	944	82,510
1901.....	640	36,114

(3) The effect upon poor relief.

While it was not announced as one of the objects of government insurance to diminish the amount spent on the poor, it was undoubtedly expected that its effect would be to lessen the number of paupers. Investigations made into the causes of poverty in Germany some years ago, some of which were made by Dr. Victor Boehmert and others by the Imperial Statistical Bureau, concur in showing that in the aggregate some 75 per cent. of the cases of pauperism were attributed to sickness, accident, physical incapacity, old age, or death of the bread-winner. Now it so happens that all of these causes of pauperism are provided for in workingmen's insurance, and if the great mass of wage workers, who are the ones most liable on account of their small incomes to become dependent, are forced to insure themselves, and reap the benefit of the contributions of their employers, it would seem natural to expect that fewer would become dependent, and that gradually insurance would take the place of poor relief for all but the worthless or those who are peculiarly unfortunate. This expectation seems the more natural, when we consider the figures in more detail. Unfortunately we have no general statistics giving the cost of poor relief since the investigation of 1885, and it is doubtful if we should place implicit reliance upon the figures gathered at that time. Yet, as we have no others, they may at least furnish us a rough means of comparison. The number of paupers enumerated in the German Empire in that year was 1,592,386, and the amount spent upon them was about 90,000,000 marks, which gave an average expenditure for every one hundred inhabitants of 193 marks. In 1897 the total amount spent on benefits of all kinds under compulsory insurance was 256,000,000 marks, which, with the increased population, gave an expenditure for every one hundred inhabitants of about 474 marks, or about two and one-

half times the average expenditure on poor relief in 1885. This did not include the expenses of administration, but only the amount directly spent on the beneficiaries. So large an expenditure of money upon the very classes who are most liable to become dependent might be reasonably expected to almost abolish pauperism, since there must be many cases in which individual members of a family could now be supported with the rest, when they previously were thrown upon the public. That the question has interested the authorities is seen in the fact that the Verein für Armenpflege has twice, namely in 1895 and in 1901, taken the matter up for investigation and discussion, and that the Imperial Statistical Bureau undertook in 1894 and published in 1897 an elaborate investigation into the whole subject. It obtained its material mainly in the form of answers to the following five specific questions, which it addressed to the officials in charge of poor relief throughout Germany:

- A. Has the care of the poor been relieved by workingmen's insurance?
 - (a) Through sick insurance?
 - (b) Through accident insurance?
 - (c) Through old age and invalidity insurance?
- B. Has the number of those supported and the amount spent upon them since the introduction of the several insurance laws not diminished, and to what is this to be attributed?
- C. Has the care of the poor in numerous cases been made supplementary to the benefits of workingmen's insurance and provisionally substituted for them?

The answers received were not complete, and it was not possible statistically to prove either an increase or a decrease in the total amount spent upon the poor throughout the

Empire. I have, however, tried to analyze the returns as far as possible, and compared my analysis with the generalizations published by the Bureau. As regards the first question, subdivided into three heads, which asks whether the care of the poor has been relieved by workingmen's insurance, the official summary says "that by far the greater part" of the authorities questioned say that it has been relieved. A careful count shows that of the total number of answers, just 44 per cent. give a simple affirmative, while 19 per cent more give a more or less qualified affirmative answer. Yet, when we come to ask whether there has been a diminution either in the number of paupers or in the amount spent for them, it appears that 58 per cent. state that there has been no such diminution. In other words, it would appear that in a good many cases those who say that the burden of poor relief has been lessened, mean, not that it is absolutely less than it formerly was, but that it would have been increased much more, if it had not been for workingmen's insurance. When we consider that the period under consideration has been a period of industrial prosperity, commercial expansion, external peace and rising wages, we should naturally expect that the burden of poor relief would tend downwards, as it has been tending in England, and as out-door relief has been tending in many of our American cities under good administration. If there are no general economic reasons for an increase in the needs of the poorer classes in Germany, it would seem as if there must be a social or psychological reason, and there are certainly strong indications of this. While some officials speak of depression in particular trades, the migration of workers to the cities, etc., as causes of the increased expenditure, others speak of the tendency of the poor to demand more. A report from Gotha says that the poor have become accustomed to demand help from the public. It is stated that the shrink-

ing from the eleemosynary character of the poor relief is "disappearing among the needy, so that those who are not insured demand public support more frequently than formerly, and refuse private aid. Then again, those who are not insured, seeing the amounts which are paid to those who are insured, demand a more ample allowance from the poor law authorities, and not infrequently get it." It also happens here and there that, when people have been refused a demand for an allowance under the insurance law for lack of proof, they go to the poor law authorities and demand a larger sum on account of their presumptive demand for an allowance.* In a report made to the Verein für Armenpflege und Wohlthätigkeit by Wilhelm Helling in 1901 we learn some facts which seem to indicate that insurance is not having the educational effect upon thrift that was expected. "It is unfortunate," he says, "to be obliged to say that persons who have established a contingent claim upon the benefits of insurance by contributions find it so difficult to make up their minds to maintain this claim by the payment of small voluntary sums, and also that hardly any use has been made of the right of optional insurance. . . . It is positively terrible to notice the number of women who, when they marry, give up the rights, which they have earned, in order to obtain possession of a comparatively small sum of ready money, by having the half of sums already paid refunded to them." Even where the burden of poor relief has been diminished it has not always fallen to an extent equal to the cost of insurance to the employers alone. Thus in the city of Königsberg, in spite of an increase of 20,000 in the population during four years, the expenditure on poor relief has actually diminished, but, while they do not claim to have made a saving on this score of more than 130,000 marks, employers paid in 1896-1897 about

* Lass und Zahn, p. 229.

380,000 marks, or nearly three times this amount, as their share of the burdens of insurance.*

While insurance provides for indemnity only, it does not accomplish its social purpose, unless at the same time it leads to a restriction of the contingencies which give rise to the indemnity. Thus protection against fire has gone hand in hand with fire insurance, and the mere fact that in insurance pure and simple the premiums are graded according to the risk puts a certain penalty upon the encouragement of risk. It is for the interest of the insured as a body to keep down casualties, even though an individual may think that he can profit by them. It is, therefore, somewhat surprising to learn that, since the sick insurance laws have gone into effect, there has been a steady increase in the cost of sickness per member, in the expenditure for each case of sickness, and also in the expenditure for each day of sickness, as shown by the following table:

COST OF SICKNESS.

Year.	Marks.	Per Member.	For each case of Sickness.	For each day of Sickness.
1885.....	47,400,121	----	26.41	1.88
1886.....	53,041,099	----	30.99	2.02
1887.....	55,202,067	----	31.78	2.04
1888.....	61,561,484	11.40	34.93	2.08
1889.....	70,975,191	11.55	34.76	2.12
1890.....	84,040,014	12.77	34.69	2.15
1891.....	89,166,091	12.96	37.19	2.19
1892.....	94,258,373	13.55	38.03	2.20
1893.....	101,971,698	14.35	36.50	2.21
1894.....	99,588,457	13.67	39.96	2.28
1895.....	104,822,366	13.93	38.77	2.26
1896.....	109,722,779	13.81	39.70	2.30
1897.....	120,487,910	14.45	40.64	2.34

Not only has the expenditure for sickness increased, but also the number of cases of sickness in proportion to the insured, the number of days of sickness in proportion to the insured, and the number of days of sickness in proportion to each case of sickness. On the other hand, the number of

* Lass und Zahn, p. 231.

deaths has fallen in proportion to the number insured, as is shown by the following table:

	Cases of Sickness.		Days of Sickness.			Deaths.	
	Absolutely.	Per 100 insured.	Absolutely.	Per 100 insured.	Per case of sickness.	Absolutely.	Per 100 insured.
1888.....	1,762,520	32.6	29,528,770	547.0	16.8	44,500	0.96
1889.....	2,042,082	33.2	33,428,682	544.1	16.4	48,388	0.95
1890.....	2,422,350	36.8	39,176,689	595.4	16.2	54,287	0.99
1891.....	2,397,826	34.9	40,798,620	593.0	17.0	54,002	0.95
1892.....	2,478,237	35.6	42,756,026	614.7	17.3	56,413	0.98
1893.....	2,794,027	39.3	46,199,436	650.1	16.5	57,295	0.98
1894.....	2,492,309	34.2	43,686,440	599.9	17.5	54,343	0.90
1895.....	2,703,632	35.9	46,470,023	617.5	17.2	55,314	0.89
1896.....	2,763,757	34.8	47,608,226	599.2	17.2	57,000	0.86
1897.....	2,964,937	35.6	51,513,783	617.9	17.4	59,432	0.85

Curiously enough, a somewhat similar phenomenon shows itself in the case of accidents. Not only has the number of accidents increased absolutely, but it has increased in proportion to the number of those insured. The number of accidents indemnified has increased even more rapidly than the number reported, as is shown by the following table:

(a) IN INDUSTRIAL ASSOCIATIONS, EXCEPTING THE BUILDING ASSOCIATIONS.

Year.	Accidents.				Number of injured persons who have been indemnified for the first time.	
	Reported.		Indemnified.			
	Absolutely.	Per 1,000 Insured.	Absolutely.	Per 1,000 Insured.	Absolutely.	Per 1,000 Insured.
1885----	----	----	226	0.08	226	0.08
1886----	92,319	25.86	8,871	2.95	9,723	2.72
1887----	106,001	27.45	23,166	6.58	15,970	4.14
1888----	121,164	28.04	37,702	9.81	18,809	4.35
1889----	139,549	29.42	54,066	13.39	22,340	4.71
1890----	149,188	29.91	73,972	17.61	26,493	5.29
1891----	161,674	31.74	94,246	21.76	28,289	5.55
1892----	165,003	32.49	113,198	25.58	28,619	5.64
1893----	182,120	35.23	133,750	29.66	31,171	6.03
1894----	190,744	36.37	153,708	33.52	32,797	6.25
1895----	205,019	37.90	174,452	37.43	33,728	6.24
1896----	233,319	40.69	198,764	41.84	38,538	6.72
1897----	252,382	41.77	223,888	45.80	41,746	6.91
1898----	270,907	42.89	250,450	50.18	44,881	7.10

(b) IN AGRICULTURE.

Year.	Accidents.				Number of injured persons who have been indemnified for the first time.	
	Reported.		Indemnified.		Absolutely.	Per 1,000 Insured.
	Absolutely.	Per 1,000 Insured.	Absolutely.	Per 1,000 Insured.		
1888----	5,536	0.97	851	0.15	848	0.15
1889----	21,502	2.60	7,689	0.93	7,013	0.85
1890----	34,299	4.13	19,015	2.30	13,050	1.57
1891----	44,964	3.59	35,488	3.76	19,918	1.59
1892----	52,748	4.22	53,976	5.34	23,880	1.91
1893----	61,712	4.93	74,467	7.08	28,246	2.26
1894----	71,821	5.74	97,183	8.98	33,344	2.67
1895----	83,705	6.69	124,545	11.28	38,134	3.05
1896----	94,615	8.29	153,904	13.89	43,883	3.85
1897----	101,897	8.93	181,974	16.38	46,355	4.06
1898----	106,592	9.34	207,993	18.68	48,609	4.26

"Fortunately," says the report, "not the more serious accidents which result in death or complete inability to work make up the increase in the frequency of accidents. On the contrary these show a degressive tendency . . . only the lighter accidents, that is those with partial continuing and particularly those with a temporary inability to work have increased." The number of deaths for every one hundred insured has fallen materially in twelve years, as is shown by the following table:

NUMBER OF INJURED PERSONS FOR WHOM INDEMNITIES HAVE BEEN GRANTED FOR
THE FIRST TIME IN ALL KINDS OF ACCIDENT INSURANCE.

	Absolute Figures.			Per 100 injured.		
	In all.	Consequences of the injury.		Death.	Permanent incapacity of support. Complete. Partial.	Temporary incapacity.
		Death.	Permanent incapacity of support. Complete. Partial.			
1886.....	10,623	2,848	492	26.83	4.64	38.84
1887.....	16,886	3,400	688	20.13	4.07	46.28
1888.....	21,080	3,888	831	18.50	3.95	49.09
1889.....	31,387	5,906	1,040	17.54	3.31	49.82
1890.....	42,021	6,316	1,159	15.03	2.76	52.11
1891.....	51,185	6,682	1,223	13.05	2.39	53.21
1892.....	55,659	6,214	1,315	11.16	2.06	54.37
1893.....	62,720	6,732	1,303	10.73	2.00	51.53
1894.....	69,447	6,630	1,301	9.53	1.90	50.15
1895.....	75,505	6,686	1,438	8.86	1.56	49.94
1896.....	86,462	7,278	1,350	8.42	1.63	50.99
1897.....	92,326	7,416	1,907	8.03	1.16	50.35
1898.....	98,023	7,984	1,139	8.15		49.33

This is a puzzling phenomenon. The official report says, "From what has been said there is no ground for the claim that obligatory accident insurance itself leads to an increase of accidents, in that it makes the workingmen careless and employers indifferent. That anyone should now, having

regard to the existing insurance, expose himself more frivolously to an accident; that he should allow a finger to be cut off, or allow his leg to be crushed, is in contradiction, as Boediker well remarks, to the instinct of self-preservation. The fear of pain, the uncertainty of the result, which may be deadly, operate upon the mind more than the prospect of getting an allowance which at the most may be equal to two-thirds of the forfeited earnings. Accidents which are brought about intentionally are in any case not indemnified.”*

This a *priori* reasoning is a plausible answer to the claim that men deliberately injure themselves to get an indemnity, but cases are not unknown in which people have acted in what seems to be an irrational manner, and it still remains necessary to explain why minor accidents should have increased in spite of the very great efforts made by employers to introduce safety appliances and prevent injuries. A number of reasons are, therefore, given for this increase:

(1) It is said that they are more strictly reported, which is probably the case.

(2) The increase in the use of machinery and the concentration of workmen in large establishments is given as a reason, but this argument seems to be weakened by the fact that the increase in the frequency of accidents is more noticeable in agriculture, where the Germans use much less machinery than in industry, for while the industrial accidents reported increased less than three-fold in twelve years, accidents in agriculture increased about twenty-fold in ten years. Moreover, it is remarkable that, if the different occupations are ranked according to the frequency of accidents, those which involve the use of comparatively little machinery are near the head, while those involving much machinery are at the foot. Thus the number of persons indemnified per 1,000 persons insured is found to be 16.97 per cent. in the case of

* Lass und Zahn, p. 167.

vehicle driving, 13.51 per cent. in the case of grist mills, 11.94 per cent. in the case of quarries, while in railroads it is but 5.86 per cent, in metal industries 4.21 per cent., in textile 3.41 per cent.* The claim that machinery is responsible for the increase in accidents would, therefore, hardly seem to hold true.

(3) It is claimed that the great activity of trade has required the appointment of less experienced men. It is impossible to control this statement by statistics, but some light is thrown upon it by the figures which show that accidents are much less frequent in proportion among the younger men than among the middle aged and elderly.

It appeared, for instance, in 1897 that the number of the injured, in proportion to one hundred insured in each class, varied as follows:

Under 16	0.24	20-30.....	0.54	50-60.....	1.38
16-18.....	0.32	30-40.....	0.92	60-70.....	1.42
18-20.....	0.36	40-50.....	1.23	70 and over.....	0.85

It is not shown that the inexperienced laborers are necessarily the young, but this is not an unfair assumption.

(4) The increased familiarity of the men with the law is given as not the least of the causes, and there seems every reason to consider this true. In other words, the causes of the accidents are not mainly material or mechanical, but to a large extent psychological.

The psychological element in accidents also shows itself in the distribution of accidents according to the day of the week and the hour of the day. We find quite universally that Monday furnishes the largest number of accidents, and Saturday the next largest, and this law applies both to industry and to agriculture. An interesting table bearing upon the same subject is one which shows a diminishing percentage of accidents due to the fault of the industrial worker:

* Figures quoted in Lass und Zahn, p. 170, also in the Report of the New York Bureau of Labor for 1899, p. 769.

	1887.	1897.
Fault of employer	20.47%	17.30%
“ worker	26.56	29.74
“ both together	4.61	4.83
“ fellow workers, or third person	3.40	5.31
Other causes, such as danger of occupation	44.96	42.82

One is tempted to contrast the German figures with the results of the operations of a mutual fire insurance company in which the beneficiaries also bear the losses, and therefore have a direct motive for minimizing them. The Manufacturers' Mutual Fire Insurance Co. was organized in 1850. It is at present under the management of Edward Atkinson, who is president and treasurer. Being mutual, it is similar to the accident insurance associations of Germany, in that those who pay the premiums also have to bear the losses; so that the manufacturers in this company are interested, as the German manufacturers are, in reducing to a minimum the accidents that cause losses. The statistics, running over half a century, are very instructive regarding the effects of this system, especially if we take the figures averaged by decades. The single years show considerable variations, as might be expected. The report issued for the year ending December 31, 1899, gives the rate of loss to the amount written per hundred dollars, as follows:

First decade.....	1850-1859 — 0.3631
Second “	1860-1869 — 0.2427
Third “	1870-1879 — 0.2098
Fourth “	1880-1889 — 0.1963
Fifth “	1890-1899 — 0.1080

It is difficult to escape the impression that the number of minor accidents has increased under the operation of the insurance laws. Whether workmen have become more careless, or whether they have become more ready to exaggerate their injuries, the effect of giving them under the forms of insurance an indemnity of which they do not bear the burden seems to have stimulated an irresponsibility, which all the efforts of the employers to diminish accidents have not yet overcome.

There are other facts which indicate similarly a relaxation of the spirit of self-help. The following figures, which give the expenditure of the German socialist unions on benefits, show that there had been but a very slight increase in these items:

EXPENDITURES ON BENEFITS OF THE GERMAN SOCIALIST UNIONS.
(Gewerkschaften.)

	Sick- ness.	Inva- lidity.	Death and emergen- cies.	Unem- ployment.	Travel.	Aid to the dis- ciplined.	Legal help.	Total.
1891	-----	-----	-----	64,290	144,338	14,737	10,843	234,208
1892	-----	21,972	25,284	357,087	382,607	236,964	9,705	1,033,619
1893	304,648	-----	41,762	220,926	328,748	28,321	12,542	936,947
1894	425,489	-----	41,744	239,750	350,455	14,630	12,902	1,084,970
1895	454,114	-----	42,080	196,912	308,603	40,307	15,871	1,051,887
1896	430,038	57,947	53,837	243,201	310,000	37,346	18,349	1,150,718
1897	454,494	68,088	64,906	260,316	289,036	30,973	30,147	1,197,960
1898	491,634	79,587	78,419	275,404	283,267	39,978	43,378	1,201,667

The deposits in the savings banks, while they show an increase, show a diminishing rate of increase of the smaller deposits.

	Prussia.		Bavaria.
	Deposits.	No. depositors under 60 M.	Deposits.
1880	1,593,000,000	725,477	80,000,000
1885	2,261,000,000	1,214,147	130,000,000
1890	3,281,000,000	1,609,881	184,000,000
1895	4,345,000,000	1,972,134	254,000,000
1896	4,656,000,000	2,067,980	270,000,000
1897	4,968,000,000	2,164,621	284,000,000

Number of small deposits under 60 Marks:

Increase 1880-1885 by 488,670 or 69%.

" 1885-1890 by 385,734 or 32%.

" 1890-1895 by 362,253 or 22%.

Increase of total deposits.

1880-1885 668,000,000 or 41%

1885-1890 1,020,000,000 " 45%

1890-1895 1,064,000,000 " 32%

Even the figures which show the increase in the consumption of common articles do not compare very favorably with those of England. The consumption of beer in Germany increased much more rapidly than that of sugar between 1880 and 1895. In England, on the other hand, from 1860 to 1896 the notable increase was in the consumption of tea, sugar and tobacco, while the income in the consumption of spirits and beer has been moderate. The following tables illustrate this point:

CONSUMPTION OF BEER.

Increase per capita in Germany.

		Increase.
1880.....	84.6 liter	
1885.....	88.8 "	4.2 liter
1890.....	105.8 "	17.0 "
1895.....	115.7 "	9.9 "

CONSUMPTION OF SUGAR.

Increase per capita in Germany.

		Increase or decrease.
1879-1880	6.3 kg.	
1884-1885	9.9	+3.6
1889-1890	9.5	-0.4
1894-1895	10.7	+1.2

ENGLAND.

	1860.	1896.
*Average increase weighted in consumption of 14 articles		
Tea	83.9	117.2
Sugar	62.0	134.0
Tobacco	60.0	152.0
Spirits	86.0	122.0
Beer	80.0	86.0
	77.0	111.0

[* These figures are index numbers, the average consumption from 1870-79=100. From article by G. F. Wood in Journal of Royal Statistical Society for Dec., 1899.]

It was stated at the beginning, that one of the chief characteristics of government insurance was that the premium was turned wholly or partly into a tax—a payment, therefore, not borne exclusively by the beneficiary. The German experience with this kind of insurance seems to show that, while it is possible with a highly trained intelligent administration to carry through a scheme which will compel provision against various contingencies, it has thus far been impossible to create the instinct of forethought and care which is implied where insurance is voluntary. In fact, there are many facts which go to create a strong presumption that the result of this governmental care is actually to make people less careful of the future, and less judicious in their expenditure.

INSURANCE LAW

BY CHARLES E. GROSS

The subject—Insurance Law—which has been assigned to me is so comprehensive that anything like a didactic treatment of it in a fifty minute talk is impossible, and, I assume, is not expected. One of the last treatises upon this subject which has been published comprises four large volumes, containing 81 chapters and 3,963 pages. In the lecture rooms of another department of this University distinguished and learned professors, and much more competent to instruct than I, consume weeks, and even months, in elucidating the principles of insurance law. Under such conditions, as you will readily understand, any attempt on my part at an hour's abridgement of this subject would be foolish and useless.

I understand that these lectures are given in order to furnish you a little insight into the practical questions of insurance, and that all that is expected of me is to talk to you out of my personal experience as one who for over thirty years has had almost daily some insurance problem to deal with as counsel for some of our Hartford insurance companies. You will readily appreciate that all of practical insurance of which you have been told by the able administrators thereof, who have preceded me in this course, is covered by the mantle of my subject. At the same time, I appreciate that you are beginners in the study of this branch of practical business and not law students in the professional sense; consequently any talk upon my subject must necessarily be principally elementary, if it is to be to any extent instructive.

What part of my subject, then, can I take which shall be more or less instructive and at the same time somewhat practical and interesting? I have chosen this: The uncertainty of "Insurance Law," as it unfolds in the daily consultations of the home counsel of an insurance company.

We generally associate with the word "law" the idea which it represents in nature,—the universality of its action. Would not the word be a misnomer if we did not understand that it would be the same to-morrow that it was yesterday, or is to-day. Yet it is a fact, however strange, to contemplate, that I can start from New Haven to-day with an insurance policy in my pocket which has one judicial interpretation in this State of Connecticut, but will receive another when I reach New York, a third in Ohio, one entirely different from all in Iowa, and possibly a new one when I reach the territory of New Mexico and the jurisdiction of only the United States courts; and all of these decisions being rendered upon the simple request of the insurance company which issued the policy to be informed to whom it can safely pay the proceeds of the policy.

And yet of such a composite nature is the so-called Insurance Law of this country. Its uncertainty from the standpoint of the home office is my special subject. I must take you along as Cook's tourists are often taken through the museums of Europe, hastily calling your attention to one thing of interest and then to another, without time for explanation and without giving you an opportunity to examine, or, as I fear, to understand.

In expositions of mechanical creations, the ordinary visitor is often hastily shown the various forms into which genius and skill have incorporated the fundamental principle and which is the subject of the exposition, and then a much longer time is sometimes taken in viewing, in some annex, the irregular and fake creations of those who have with much skill attempted

to circumvent the underlying patented principle and to produce a result which, *pro hac vice*, at least, seems to accomplish the desired result. If I shall seem to lead you aside in like manner, it will be for the reason that the irregular often emphasizes the point desired to a greater degree, and the lesson is thereby made more lasting.

Insurance to-day, in the United States at least, is transacted almost entirely by corporations. There are in England associations of individual underwriters called Lloyds, some of which are doing business in this country. These associations were originally formed for the purpose of collecting and diffusing among the members marine news, and subsequently they engaged in mutual marine insurance, and of recent years they have gone into the field of fire insurance. They derive their name from an old coffee house in Lombard Street, London, called Lloyds, where in a certain room set aside for the purpose, the ship owners met and conferred and where marine insurance in England as a system had its birth. The advantage of a corporation is in the limited liability of its stockholders. The same result is sought in the associations termed Lloyds by a provision in the contract limiting the liability of any one individual underwriter to a maximum amount.

Insurance corporations in this country may be divided into four general classes:

1. Stock companies, where there is a capital stock paid in by the stockholders, who take the risk of the business to the extent of the capital contributed and receive dividends on their stock out of the profits of the business.

2. Mutual companies, where the insured either pay or by note promise to pay, larger premiums than in the stock companies, and thereby contribute to a fund for the payment of death losses. From time to time rebates are made on these premiums called dividends, by means of which the company returns to

the insured so much of his previous premiums as experience in losses has demonstrated that the company did not require.

3. Mixed companies, where a stock company has a mutual or participating department, and so unites the two systems.

4. Assessment companies, which are of many kinds, but in which the underlying plan is that the member shall pay a small premium each year to meet the necessary business expenses of the company, and then to meet death losses shall contribute his share as determined from time to time by the provisions of the particular plan under which he is insured. In most of such companies payment of such contribution is optional, the only penalty being that if not made the person so neglecting ceases to be a member or entitled thereafter to any benefits of the insurance. In some of said companies, a member can be compelled under his contract to pay his share of a death loss under a call made by the company before he resigns his membership.

The weak point in many of these assessment companies is this, that while they theoretically call for a division of the particular loss among many, there is no assured method of compelling the many to pay to the individual loser the loss when divided. This is assured in other companies by the capital, surplus, funded reserves and mortuary funds.

Insurance corporations are organized under charters or general laws passed in the different states, and by virtue of such incorporation are citizens of the state where organized. They very rarely, however, confine their business to their home state, but generally carry on business—the larger companies at least—in nearly every state of the Union. Many also go to Canada, some to Mexico and South America, a few to Europe, and one or two even to Australia. A corporation cannot travel, and it is therefore obliged to transact its business in other states and countries by its agents there resident or sent there for the purpose.

Although a corporation is a "citizen" of the state where organized, it is not a "citizen" under the provisions of Section 2 of Article IV of the Constitution of the United States, which provides that "the citizens of each state shall be entitled to all privileges and immunities of citizens in the several states." Consequently a corporation has no constitutional right to transact any business in any foreign state or country, except with the consent of that state or country. This consent is called "comity," but it is not an absolute consent. The state granting it has the right to attach to it such conditions and provisions as it may see fit. These conditions are justified under the police power of the sovereignty; that is, for the protection of its own citizens.

In the state where incorporated, a corporation is subject to the rights of visitation on the part of the state, and the right is now generally exercised by requiring in the first place from the corporation at stated times reports as to its business and financial condition. In the case of insurance corporations, these reports are made to a state official, generally the Insurance Commissioner, through whom the state exercises its supervision over such corporations. A state has not of right, however, this power of visitation in the case of a foreign corporation, but it generally demands it, to a greater or less degree, as a condition of the "comity" or consent granted to such foreign corporations to do business within its jurisdiction. This condition generally takes the form of a requirement that a foreign insurance corporation shall make the same stated reports to the insurance commissioner of the state as is required of its own corporations.

Each state establishes by law its own standard of the theoretical solvency of an insurance company;—that is, it establishes by statute a method of ascertaining the amount of property which an insurance company must always have on

hand as against the total liabilities of its contracts which are expected to mature in the future according to the tables of experience.

If an individual contracts to pay more money than he has property to respond for, we say that he is insolvent. A fire insurance company, however, may have outstanding contracts calling for \$730,000,000 and have assets of only \$15,000,000, and a life insurance company may likewise have policies outstanding calling for \$75,000,000 and assets of only \$17,000,000; yet we do not say that they are insolvent, but on the contrary, very sound financially. In case unprecedented conflagrations or widespread epidemics should bring maturity to all of said policies at once, the companies would be insolvent. Insurance business is done, however, on the doctrine of chances formulated on the experiences of the past. The state, therefore, bases its demand of solvency upon the same experiences, and in the case of a life insurance company requires it to carry a reserve fund as against its outstanding obligations which, if invested at a given rate of interest, will furnish, according to said tables of experience showing the expectancy of the lives of the insured, a fund which at the maturity of the policies will be sufficient to meet the obligations.

In fire insurance, a reserve is required by law to be carried by the companies which is fixed at an arbitrary amount, e. g., 50 per cent. of the gross premiums. Each state seeks to keep as full a control as possible of the insurance business transacted within its borders, and this control is delegated to the respective insurance departments. Over forty states have such insurance departments, and in late years the commissioners have accomplished much good in systematizing and unifying the business so far as supervised by them. Their work is supplemented by various laws, such, for instance, as the resi-

dent agency law, which forbids the issue by any insurance company doing business in the state, of any policy upon property situated within said state except through an agent resident within the state. Such a law helps to make the policy a contract of the state where the insured property is situated, and so subject to and amplified by the laws of that state. This also sometimes is done by statute.

An insurance company is therefore obliged in all of its business to keep constantly before its eyes not only the law of its own state, which is a part of its charter, but also the fear of the penalties of the law of every state and country in which it transacts its business and for its good behavior in that respect the general counsel is held more or less responsible. But the statutory laws and department requirements furnish the least of the troubles of the adviser. There is a much greater one owing to the great diversity of insurance law as expounded by the courts of the different states. This country inherited from England a common law which, previous to our independence, had become established in the mother country, and had become a bulwark of protection for life, liberty and the enjoyment of property. But this system did not include the law of insurance, except to a slight degree, as affecting marine insurance.

Insurance law has been created since the Revolution. It is the joint product to-day of the state legislatures and of the courts, including our Supreme Court of the United States, some nine circuit courts of appeals, and of forty-five courts of last resort in the various states. The decisions of these courts are now final and no matter how conflicting or inconsistent with each other, constitute the laws of the land within their respective jurisdictions. Insurance law is therefore far from being an exact science; it is not even a system. It is a growth which has been built up almost entirely during the

nineteenth century, and principally during the last fifty years. It has taken innumerable shapes, sometimes almost unrecognizable, and often diametrically opposite to each other. These forms have had innumerable architects, but no master mechanic; they have had no common school nor court of last resort. The builders have not been union men and have had no common plan. The result therefore to-day is, that the structure, if such I may call it,—which is termed insurance law,—is neither scientific, architectural nor homogeneous.

The creators of this result in this country have been, as I have stated, the legislatures in the various states, and the federal and state courts—each different body working independently and often jealous of the others, and not striving for harmony of result, for any system of law, or for a common public policy. In this respect, this branch of the law has differed widely from practically every other branch.

All questions of patent law come at last to a common bar for elucidation and enunciation. So, also, admiralty law has one common fountain head. Real estate law is necessarily local, and can be understood. Commercial law and criminal laws have their sources in the scientific common law, although often changed by statute. But it is not so as to insurance law, and no one realizes this more than the counsel of an insurance company, to whom comes its legal questions from every state and territory of the Union.

Let me illustrate this diversity. Some years ago, one of my clients, a life insurance company, was sued on a policy in a state court of another state where it was transacting business. As the exact question involved had been previously decided by a court of the highest standing, we all supposed that the company had a complete legal defense. Upon further examination of the question, however, after suit had been commenced, I found that the Supreme Court of said state within

a few months prior to my examination, had decided the same question exactly opposite to the previous decision which had been rendered by the United States Supreme Court. I then advised my client to remove the suit from the state court into the Federal Circuit Court (as in that state it had the right to do) in order to escape the obnoxious state decision and to avail itself of the more satisfactory decision of the Federal Court. Had the suit been removed, all liability under that particular policy would have been avoided, but unfortunately the lawyers to whom the case was sent failed to file the removal petition within the time allowed by the statute, and the company was compelled by the state court to pay the policy. Upon the same question of liability involved in that case there were two exactly opposite decisions—rendered respectively by two of the ablest courts in our country—in force at the same time, and in the same place—and the liability of the company depended entirely on the forum in which it could have its cause tried.

Some few years ago another of my clients was ready and willing to pay a policy which it had issued in one of the western states and which had matured by death of the insured and which was payable by its terms to his executor, administrator or assigns. The policy was a personal asset of the decedent's estate, and by the law universal, as you know, personal property of a decedent passes to the personal representative, while real estate descends to the heir. My client notified the family that it was ready to pay the policy as soon as an administrator should be appointed. They refused to take out letters of administration, and so the policy was not paid and the matter lay dormant for over a year until finally the heirs-at-law brought suit against the company, and I then found that in that state in another case, which was a suit by the heirs-at-law upon a similar policy payable to the personal representatives of the decedent, the highest court

had held that the title to personal property, the same as to real estate, descends upon the death of the owner to the heirs-at-law subject only to the rights of creditors to take out letters of administration within a reasonable time, and as such a time had elapsed and no letters had been asked for, the heirs themselves could maintain a suit for the proceeds of the policy without taking out letters of administration. It is only necessary to remark that this was a suit against a life insurance company in a western state, where life insurance companies were not popular. But it was a decision which declared the law of that state, and my client was obliged to pay, without a receipt from any personal representative of the insured.

Numerous other examples could I give of the conflicting decisions, not only of construction, but upon the fundamental principles of insurance. And these cases which I have cited only show that in all insurance matters the first duty of the adviser is to acquaint himself with the law of the particular forum, both the statutory law of the state and also that which has been established by the decisions of its own local courts.

I have attributed this diversity of law in insurance cases to the fact that we did not inherit from England any system of insurance law as a part of the common law, so that our insurance law of to-day is a crude mixture of irreconcilable contributions of numerous independent courts rendered during the nineteenth century. To understand this we must look briefly to the history of insurance law, its earlier phases, and ascertain, if we can, whether there was any fundamental principle underlying all insurance which has been recognized in some and ignored in other decisions of later years. Other lecturers in this course, as I assume, have told you of the uncertain origin, and certainly great age of insurance. A system of marine insurance was undoubtedly known to and practiced by the ancients, and during the middle ages by the

maritime countries of Europe, but we are quite ignorant of the exact character. The American Cyclopedia (9 Am. Cycl., 314) says it is possible that insurance (meaning marine insurance) was common among merchants centuries before it was recognized by law. The Roman law and the Roman jurists are all silent upon the subject.

During the sixteenth century a vast commerce grew up between England and the Netherlands and the merchants are said to have fallen into a way of insuring their merchandise from losses at sea by joint contributions—that is, the loss of one was distributed among and borne by all, and later associations of ship-owners for this purpose were established in many of the seaports of England. But their insurance transactions were adjusted by and among the ship-owners, and consequently did not give rise to litigation and, therefore, were not for many years recognized in any system of law. The explanation for this is undoubtedly to be found in the fact that the risk was generally assumed—certainly among the Greeks, Romans and early Teutons—by individuals, and sometimes by clubs and societies, which in some countries have existed from time immemorial for the purposes of mutual benefit and assistance in time of emergencies.

We know that this was the way that the business was originally transacted in England, and that the principle of mutuality or reciprocity was applied for the protection of the individual. Whatever contract there was, it was a very simple one, and the adjustment, in case of loss, was for many years left to the members of the association by whom it was to be paid. Their contributions were regulated by the customs of merchants more than by any arbitrary rules, and these customs of merchants gradually came to be compiled into "sea laws," so called, and they in time furnished the principles upon which contests under these mutual agreements for protection were settled.

The first English statute on insurance was passed in 1601, in the forty-third year of the reign of Queen Elizabeth. Its preamble and purpose are so interesting that I desire to give it. It is entitled, "An Act Concerning Matters of Assurances used among Merchants.

"Whereas, it ever hath been the policy of this realm by all good means to comfort and encourage the merchant, thereby to advance and increase the general wealth of the realm, her Majesty's customs, and the strength of shipping; which consideration is now the more requisite, because trade and traffick is not at this present so open as at other times it hath been: and whereas it hath been time out of mind an usage amongst merchants, both of this realm and of foreign nations, when they make any great adventure (especially into remote parts) to give some consideration of money to other persons (which commonly are in no small number) to have from them assurances made of their goods, merchandize, ships and things adventured, or some part thereof, at such rates and in such sort as the parties assurers and the parties assured can agree, which course of dealing is commonly termed a policy of assurance: by means of which policies of assurance it cometh to pass, upon the loss or perishing of any ship there followeth not the undoing of any man, but the loss lighteth rather easily upon many than heavily upon few, and rather upon them that adventure not than those that do adventure, whereby all merchants, especially of the younger sort, are allowed to venture more willingly and more freely: and whereas, heretofore such assurers have used to stand so justly and previshly upon their credits, as few or no controversies have arisen thereupon, and if any have grown, the same have from time to time been ended and ordered by certain grave and discreet merchants appointed by the Lord mayor of the city of London, as men by reason of their experiences fittest

to understand, and speedily to decide those causes, until of late years that divers persons have withdrawn themselves from that arbitrary course, and have sought to draw the parties assured to seek their monies of every several assurer, by suits commenced in Her Majesty's courts, to their great charges and delays: for remedy whereof, be it enacted by the authority of this present parliament, That it shall and may be lawful for the Lord Chancellor, or Lord Keeper of the great seal of England, for the time being, to award forth under the great seal of England, one general or standing commission, to be renewed yearly at the least, and otherwise so oft as unto the said lord chancellor or lord keeper shall seem good, for the hearing and determining of causes arising under policies of assurances such as now are or hereafter shall be entered within the office of assurances within the city of London, and whereof no suit shall be depending the last day of this session of parliament in any of Her Majesty's courts; which commission shall be directed to the judge of the admiralty for the time being, the recorder of London for the time being, two doctors of the civil law, and two common lawyers, and eight grave and discreet merchants, or to any five of them: which commissioners, or the greater part of them, which shall sit and meet, shall have by virtue of this present act full power and authority to hear, examine, order and decree all and every such cause and causes concerning policies of assurances in a brief and summary course, as to their discretion shall seem meet, without formalities of pleadings or proceedings."

This act of parliament shows us very clearly that at the date of its passage insurance questions were very novel and not understood even by the law makers of the realm, much less by the people. Under this act a very remarkable *quasi* court (called by Blackstone "Court of Assurances") was

established, but all pleadings and system of procedure in this court were abolished. Insurance cases or questions were to be decided by this court, for they were regarded as not being within the jurisdiction of either the common law courts or the courts of admiralty.

Look also, to the personnel of the court, how discordant, and in fact antagonistic! It was to be composed of the Admiralty Judge, educated in the maritime Codes or Laws of Nations; the recorder of the city of London, a common law judge, two doctors of the civil law, two common lawyers and eight grave and discreet merchants;—a court comprised in fact of judges, jury and lawyers—and in order that the judgment might hit the mark if it was a deer, and might not miss it if it was a calf, a judge and two doctors of the civil law were to act, if they would, with a judge and two doctors of the common law in formulating the decision of legal questions, while the eight grave and discreet merchants attended to the matter of the loss. Any student of the history of the law knows the impossibility of any united judgment by such a court *en banc*. The powers, however, of this special tribunal were largely those of arbitrators, and they seem to have been confined to the adjustment of the amount of the loss, a matter which in our present fire policies is committed to appraisers, whose finding is now a condition precedent to a right of action upon the policy. This special English court was but short lived; its jurisdiction was limited; the exercise of its powers was often enjoined, and its sittings soon ceased.

Insurance law as such had not then been born. Justice Park, the earliest writer upon insurance, whose book was published about 1796, says that wherever, up to that date, insurance was mentioned by professional men, marine insurance was meant, and that down to 1756, as there had "been but few positive regulations upon insurance, the principles on which they were

founded could never have been widely diffused nor very generally known." Justice Park also states that the most ancient case which he had been able to find was one decided in 1588, and that down to 1756 there were not more than sixty decisions upon insurance, and says that "even those cases which are reported are such loose notes . . . that little information can be gathered upon the subject." Marshall says that previous to the creation of the court of assurances of which I have just spoken, all disputes were settled by arbitration and, as I have stated above, the function of that court seems to have been simply to adjust the amount of the loss.

Thus the contract of insurance grew out of the customs of merchants and the only law which enforced the contract was the maritime law which was the formulation of the customs of merchants and so became recognized in the laws of nations. Insurance at first was nothing more than a system of voluntary contributions, expanding afterwards into laws of general average. Later, out of the division of the loss naturally came a division of the risk, first through a contract of mutual insurance and later of a contract of insurance on a premium rate. Out of this class of insurance by natural processes came fire, life, and later, all classes of insurance.

It is a matter of historical interest that the first record of a life insurance case in England, which I have been able to find, is one in which, in 1649, the insurance upon a sailor's life was seriously claimed to be a contract of marine insurance. In this connection, it will interest you to know that Comyn (of whom Kent speaks so highly), in the fourth edition of his digest of English law published in 1800, refers to only four life insurance cases as having been reported down to that date. Judge Swift, of this state, in his *System of Law*, published

in 1795, one of the earliest law books published in this country, has only eleven lines on the subject of insurance law, and they relate entirely to marine insurance. So, it appears that "insurance law" as relating to every risk, except marine, has been established practically since 1800.

Previous to the year 1800 one great principle had, however, been enunciated as at the foundation of all insurance, and that was this, that public policy demanded that the contract of insurance should be one of indemnity only. The opportunity for gain beyond an indemnity was not allowed to be an incentive to destroy. And the courts uniformly held that a contract of insurance beyond the value of the interest of the insured in the property was a wager, or gambling contract, and so void at law. So, for many years, a contract of reinsurance was held to be a gambling contract, since it was only the reinsurance of a risk and had no connection with the property covered by the original insurance.

It was on account of this aversion to anything that seemed a wager that life insurance was established so slowly, even after its advantages were well understood. For many years in England, and even in Massachusetts as late as 1805, it was contended that a contract of life insurance was a wager or gambling contract, as the loss could not be adjusted on the basis of indemnity, the reason as given being that "man cannot be estimated at any price," or that "the life of man is not an object of commerce and it is odious that his death should form matter of mercantile speculation."

Life insurances were forbidden by law in France in 1681, and were not permitted until the latter part of the eighteenth century. They were also forbidden by law in 1570 in the Netherlands; in 1588 by the civil statutes of Genoa; but, at the same time, were permitted at Naples, Florence and in several other European countries. In England, however, no

objection to the true principle of life insurance was seriously raised, and such assurances were mentioned by writers as early as the middle of the seventeenth century. But parliament and courts and all of the earlier writers on the subject made a clear distinction between true insurance and anything which smacked of a mere wager, so that it came to be universally held that the contract should be one of indemnity only, and that the principle of insurance should not be prostituted to the uses of the gambler.

To avoid the evils which some anticipated from the abuse of life insurance, the English gambling act, so called, was passed in 1774. The act was entitled, "An Act for regulating insurances upon lives, and for prohibiting all such insurances, except in cases where the persons insuring shall have an interest in the life or death of the persons insured.

"Whereas, it hath been found by experience that the making of insurance on lives or other events, wherein the assured shall have no interest, hath introduced a mischievous kind of gaming; for remedy whereof be it enacted, etc., That, from and after the passing of this act, no insurance shall be made by any person or persons, bodies politic or corporate, on the life or lives of any person or persons, or on any other event or events, whatsoever, wherein the person or persons for whose use, benefit, or on whose account such policy or policies shall be made, shall have no interest, or by way of gaming or wagering; and that every assurance made contrary to the true intent and meaning hereof shall be null and void to all intents and purposes whatsoever. . . .

"And Be it Further Enacted, That in all cases where the insured hath interest in such life or lives, event or events, no greater sum shall be recovered or received from the insurer or insurers than the amount or value of the interest of the insured in such life or lives, or other event or events."

No other act, in my opinion, has ever stated more clearly the true principle of public policy in connection with insurance.

So, we come to the nineteenth century with one well recognized principle of insurance, to wit, indemnity. But what is indemnity? The different kinds of insurance are as unlimited as the number of kinds of property which are liable through exposure to perils to injury or destruction from natural causes, as the destruction by fire, tornado, accident and perils of the sea, and to these are to be added also insurances on life; health; against accident; and employer's liability, and also those insurances which provide against loss from such artificial causes as the insolvency of debtors, burglary, failure of title to land, failure of crops, and the infidelity and negligence of employees.

All of these different kinds naturally divide into three great classes which may be respectively called,—

1. Property insurance, covering risks to inanimate property where the loss may or may not happen and where if a loss does happen the damage resulting may be total or partial.

2. Pure life insurance, where the event insured against is certain to happen in the course of events, and in which cases the loss when it does happen (if within the period of the insurance) will be total to the full extent of the amount of the policy, so that the only uncertain element is not *whether* the event will happen, but is simply as to *when* it will happen.

3. Accident and health insurance wherein arbitrary indemnity is promised in personal injury cases and against sickness of the insured.

In the case of property insurance, indemnity means that the financial loss to the insured is to be made good (but not exceeding the amount stated in the policy), and in no case is he to receive a profit or financial advantage by reason of the

loss. This rule of construction is furnished by public policy, which demands that at all times the true interest of the insured shall lie more in the preservation of the property than in its destruction. In the case of life insurance, indemnity means that the beneficiary must have an insurable interest in the life of the insured, but the amount of that interest is to be determined by the provisions of the contract, etc. In accident and health insurance, there is a natural presumption in favor of the financial value of a person's health and ability to attend to business, and the arbitrary amounts designated in the policy are based upon the average value of such health to persons in the class in which the policy is issued.

The chaotic condition of insurance law since 1800 is due very largely to the failure of the lawyers, courts and juries, and oftentimes of the legislatures, to recognize the true principles of indemnity. Insurance law, as it has been manufactured, in the United States at least, has been largely a chapter in the law of contracts for the reason that most cases have turned on the interpretation of the provisions of the policy. Until within a few years, every insurance company formulated a policy to suit itself, containing innumerable conditions, both precedent and subsequent, often inconsistent with each other, confusing to the insured, difficult to interpret, and very obnoxious to the public generally.

The result up to about 1880 was a general hostility to any insurance company that defended a case in court. The companies as a class were largely to blame for this. Many companies contested every loss in which a shrewd lawyer could devise a defense on the facts, or raise a doubt as to the construction of the policy. The greater the number of defenses, the stronger each was regarded as becoming. This course of dealing with the insured prejudiced the general public, from whom juries are drawn, and the general atmos-

phere of the court room was full of suspicion and, often, unbelief. This prejudice extended to the judges, and a reputable company with a perfectly valid defense often had difficulty in obtaining an impartial trial.

Some years ago, as counsel for one of the soundest and most reputable companies of the country, I tried a case before a former judge of our court, who listened patiently to the testimony of men of character and unimpeachable business reputation whom I introduced as witnesses. On the argument, I submitted my authorities based upon the testimony as offered. After some weeks I was surprised to learn that the court had decided against my client. Knowing that the decision, if not set aside, meant great financial loss, not only to the company interested, but also to every insurance company in this state, I stated that fact to the judge, and he promptly said that my law was all right, but he regarded all the testimony as only "insurance buncombe." I succeeded in obtaining a reargument of the case and convincing the court to the contrary and the decision was opened and reversed.

With the best of defenses, the insurance lawyer generally knew that it would be unavailing to go to a jury trial; his only hope lay in questions of construction of the contract which were within the sole province of the judge. This led to a careful revision by the companies of the conditions and provisions of their policies so that they became more liberal and sufficiently definite to cover the general questions which ordinarily might arise. This was a decided step in the right direction, but the different phraseology of the conditions in the policies of different companies still led to confusion and uncertainty of interpretation by judges, who often were unable to differentiate the case at bar from another cited from the books, and this was often due, I am sorry to say, to deliberate attempts of counsel to bring about such confusion. This con-

dition became so intolerable that fortunately out of it grew one of the most valuable advance steps in fire insurance which has taken place during the past century.

The legislatures of two states, New York and Massachusetts, formulated, by statute, forms of policies which are known in those states as the standard form of policies. One or the other of these standard forms has been substantially adopted in several other states, but, unfortunately, other states have either refused to do so or have adopted other forms, from which some of the best principles of insurance have been emasculated. The standard form of policy and the resident agency law have greatly cleared the legal atmosphere, have eliminated many of the causes of dissension and contest, and have now put into so clear and definite a form the contract between the parties that very few fire insurance cases are litigated.

The condition of fire insurance law is now, at the commencement of the twentieth century, in several of the states reduced to a well understood system which is, at last, intelligible and definite and the mutual rights of the insured and of the insurer under the contracts are now well protected. Undoubtedly as these advantages are understood, other states will take the same action and eventually there will be but one form of fire insurance contract. To-day, in the case of a fire policy, the old rule that the contract or policy must be taken more strongly against the insurer is abrogated in those states where the standard form has been formulated by the state, as it contains those provisions and only those which are regarded as fair to both parties and to which the state has given its official sanction. The standard form has adjusted and quieted many of the problems which were the capital in trade of the claimant's lawyer, and has also deprived some companies of many of their standard defenses.

Already the attitude of the public is changing and the insurance lawyer in the future will have few fire insurance cases to prosecute or to defend.

Unfortunately, the same cannot be said in connection with life insurance law. The law as relating to life insurance is in about as chaotic a state as it has been at any time during the past hundred years. The companies themselves have suffered as much as the fire insurance companies by reason of the diversity, uncertainty and vagueness of the numerous conditions and provisions in their policies. One life insurance company, whose estate is now being wound up by a receiver in the Superior Court at Hartford, issued twenty-nine different forms of policies in which it seemed to be the purpose of the company to see how many combinations it was possible to make of three or four different plans of insurance which were more or less dependent upon each other.

The courts seem to be as much disinclined as ever to enforce the true principles which prevent a life insurance policy from becoming a wager; that is, that which was stated in the English gambling act, first, that the beneficiary must have an interest in the life insured, and second, that he could not recover any amount beyond that interest. It has always seemed to me that many courts have failed to distinguish in life insurance cases between indemnity and the rule of public policy which requires the beneficiary to have an insurable interest in the life insured, but by this I do not mean a pecuniary interest, which is required in England.

A pecuniary interest is not necessary in the United States to sustain a life policy, for the reason that it is not a contract of indemnity and the value of a man's life cannot be estimated by any tables or rules. A man may have an insurable interest in the life of his parent, although the parent is a bankrupt, a cripple or even bedridden.

• In this country, where the English gambling act has never been in force, an insurable interest in life insurance is well defined by the Supreme Court of the United States in the case of Phoenix Mutual Life Insurance Co. vs. Bailey (13 Wall, 616). It says :

"The better opinion is, that the decided cases which proceed upon the ground that the insured must necessarily have some pecuniary interest in the life of the *cestui que vie*, are founded in an erroneous view of the nature of the contract; that the contract of life insurance is not necessarily one merely of indemnity for a pecuniary loss, as in marine and fire policies; that it is sufficient to show that the policy is not invalid as a wager policy, if it appears that the relation, whether of consanguinity or affinity, was such, between the person whose life was insured and the beneficiary named in the policy, as warrants the conclusion that the beneficiary had an interest, whether pecuniary or arising from dependence or natural affection, in the life of the person insured."

I understand that any legal claim for support or well grounded expectation of advantage or financial gain which shall be conditioned on the continued life of another, is a sufficient insurable interest. As best illustrating this (after mentioning the case of parent and child, husband and wife, debtor and creditor, etc.), is the relation of partners, where one is now generally conceded to have an insurable interest in the life of his copartner, although the latter is not his debtor and the firm is not insolvent. And at this point the law should draw the line. The expected advantage should be one which will increase by the prolongation of the life insured, and not one which will be enriched by an early death.

It is of interest to know that in an early English case, decided in 1806, which was the first case which I can find in which the court was obliged to pass upon the question of

indemnity, the court held that a contract of life insurance *was* a contract of indemnity. The case was expressly overruled in England in 1854, and in the same year (1854) the Supreme Court of the State of Connecticut gave its assent to the same doctrine that a life insurance policy is a contract of indemnity, and that decision has never been questioned, limited or overruled in any subsequent case in this state. The language of the opinion in the Connecticut case was unfortunate, for all that the court in fact held was that in life insurance there must be an insurable interest in the beneficiary in order to sustain the policy.

It is now the doctrine as generally established that life insurance is *not* a contract of indemnity, and this has been held by the decisions in the Supreme Court of the United States and by the Supreme Courts of Massachusetts, New York, Pennsylvania, Rhode Island, and also in other states, and I have no question but that our Connecticut court will so decide when the question is next presented. The courts still uniformly adhere to the doctrine as originally laid down in life insurance that the original beneficiary must have some insurable interest in the life insured.

In the case of *Warnock v. Davis*, decided by the Supreme Court of the United States in 1881, that court held that a person who has procured a policy of insurance on his life cannot assign it to parties who have no insurable interest in his life, and further that an assignee was not entitled to recover and hold to his own use an amount of insurance so assigned greater than his financial interest in the life insured. Unfortunately, courts of several states have not given their adherence to but have expressly repudiated this doctrine, which I believe to be the true doctrine of public policy, as limiting the scope of life insurance.

It is now a very common thing for a man to be induced to insure his life by a policy which is intended for the benefit

of another who has no insurable interest. This is done by his taking out a policy upon his own life and then assigning it to a third person, who advances the premium and who has no other interest whatever in the life insured. Unfortunately, many courts refuse to hold that this class of insurance is against public policy. If it can be shown that such a policy was not taken in good faith, some courts hold that it is a wager, and so void, but the witnesses are the parties to the transaction and they repel all suggestions of bad faith.

In a recent case which I tried, the plaintiff, an assignee of such a graveyard insurance policy, claimed the right to recover the full amount of the policy, amounting to several thousand dollars. He proved that he had advanced sums of money from time to time to the insured, who was a poor, worthless fellow, but an old friend, and had paid his board bills, such advances amounting in the aggregate to about \$500, and that fact having been proved, the court refused the defendant the right to inquire further into the financial interest of the assignee, but held that the plaintiff had proved a sufficient insurable interest to sustain the policy and to enable him to recover the *whole* amount of the insurance. It was claimed on behalf of the defendant company that the excess of insurance was clearly a gambling contract, but the company was not allowed to prove it.

Unfortunately, this is the trend of modern decisions, and the courts are losing sight of the fact that public policy demands that such insurance should not be allowed to become matters of profit to parties who find this an easy way to make their living through the death of the insured. In my opinion, this defect will in time be remedied by positive statutory enactment.

Another class of policies which has furnished numerous conflicting decisions of interpretation, owing largely to this

question of insurable interest is that class in which the policies are made payable to the wife of the insured, and in case of her death before that of her husband, to their children. Policies so written have furnished very interesting litigation. The Connecticut court in a very elaborate and learned discussion of the question decided that the policy immediately upon its issue vested both in the wife and the children as a class, and that the class would open to take in other children subsequently born; that the wife took a vested estate liable to be divested by the happening of the event specified in the policy, to wit, her death before that of her husband, and that the children took a vested interest liable to be defeated by the happening of the event specified in the policy—that is, the wife's surviving the husband. And the court held that, where the wife died before the husband and one of the children had died before the mother, leaving a child, that the grandchild of the insured succeeded to the interest of his parent, as the parent held a vested interest. And this is the policy with which I started on my western trip at the commencement of my talk this afternoon and which has received so many conflicting decisions.

In examining these diverse decisions, it is interesting to notice that in arriving at their conclusions, the respective courts pursued entirely different lines of reasoning with reference to this question of insurable interest, or else failed altogether to refer to it. In connection with this Connecticut decision, I have a very interesting story to tell you. When the Charter Oak Life Insurance Company went into the hands of a receiver some years ago, the court ordered that all policy-holders should file their claims against the assets according to forms to be prepared by the receivers. The forms so prepared provided for the proof of a "wife-and-children's-policy" by the wife and children or their guardian in accord-

ance with the decision above referred to. One of the insured, at that time a judge of the Supreme Court of Errors, whose children held a policy on his life, criticized severely the form of proof which had been prepared and asked me why anyone but himself should be required to sign it. I replied, for the reason that our Supreme Court had held that the policy was the absolute property of the children. The judge questioned this and asked me for the case, insisting that such could not be the law. I referred him to the decision and added that he himself had written the opinion, which was the fact. It is unnecessary to add that the children made the proof. The judge referred to was a director in a large life insurance company and had undoubtedly written the opinion in which all of his associates concurred after a careful study of the question, but when he next met the question in the concrete form of a personal claim he had forgotten the principle involved.

The opportunity for a great deal of litigation in life insurance cases has been removed by the present form of life policy, which is now issued by most of the companies. Instead of the old form of policy with its numerous conditions and provisions of residence, occupation, etc., the policy has now only one or two very substantial conditions as affecting materially the risk, and then provides that after two years the policy shall be incontestable.

The counsel of an insurance company is not, however, merely its mouthpiece in defense. Responsibility is his, and oftentimes principally his, in the formulation of its policy contracts. Out of these contracts grow much litigation, and their character oftentimes guides or offends the courts, whose duty it happens to be to interpret them. Much of the uncertainty of the life insurance law as it exists to-day is due to the departure from true insurance principles, which is found in many of the policies themselves. This is due largely to a

desire to devise some new form of contract which shall be especially attractive, and this desire has led some companies to formulate obligations for investment of money predicated upon some simple plan of life insurance in which the insurance feature is almost lost sight of.

Some one or two life insurance companies enjoy by charter this right to receive money on trust contracts, but in my opinion such contracts should not be labeled as life insurance contracts, for they mislead the public and impinge on the merits of life insurance. There is a legitimate field for each of these kinds of contract, but the dominant feature of each should be its own passport.

Public policy sanctions to a limited extent insurance by a husband or father, although insolvent, for the benefit of his wife and children in order to preserve them from suffering and need after his death, and in order to accomplish this the husband is allowed to devote a moderate amount of his savings to the maintenance of such life insurance for the benefit of his family which cannot be assailed by creditors. But this provision of the law does not contemplate the accumulation of a large fund, nor does it permit its use for the purpose of evading the general laws of property and its descent. This, however, seems to be forgotten by the originators of some schemes which are now offered to the public and called life insurance. Legitimate provisions for the benefit of wife and children are to be favored, but care should be taken to see that some other purpose is not substituted.

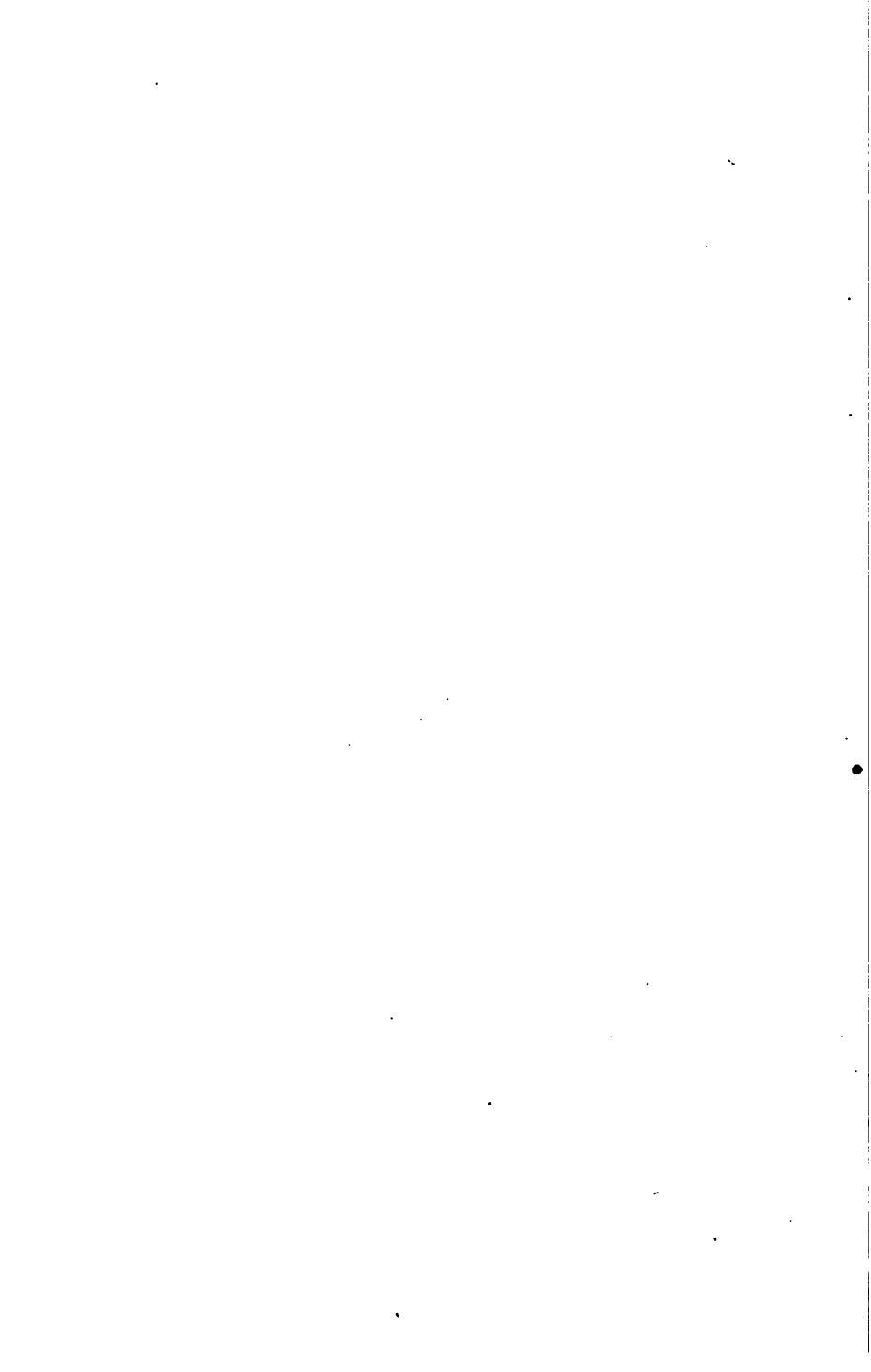
Letters are constantly received from insurance brokers asking in effect for forms of policies which will enable the insured to turn life insurance into a scheme for the distribution of property after death without the intervention of a will or court of probate. More than that, some demand that their policies shall be so written that they will be able to accomplish

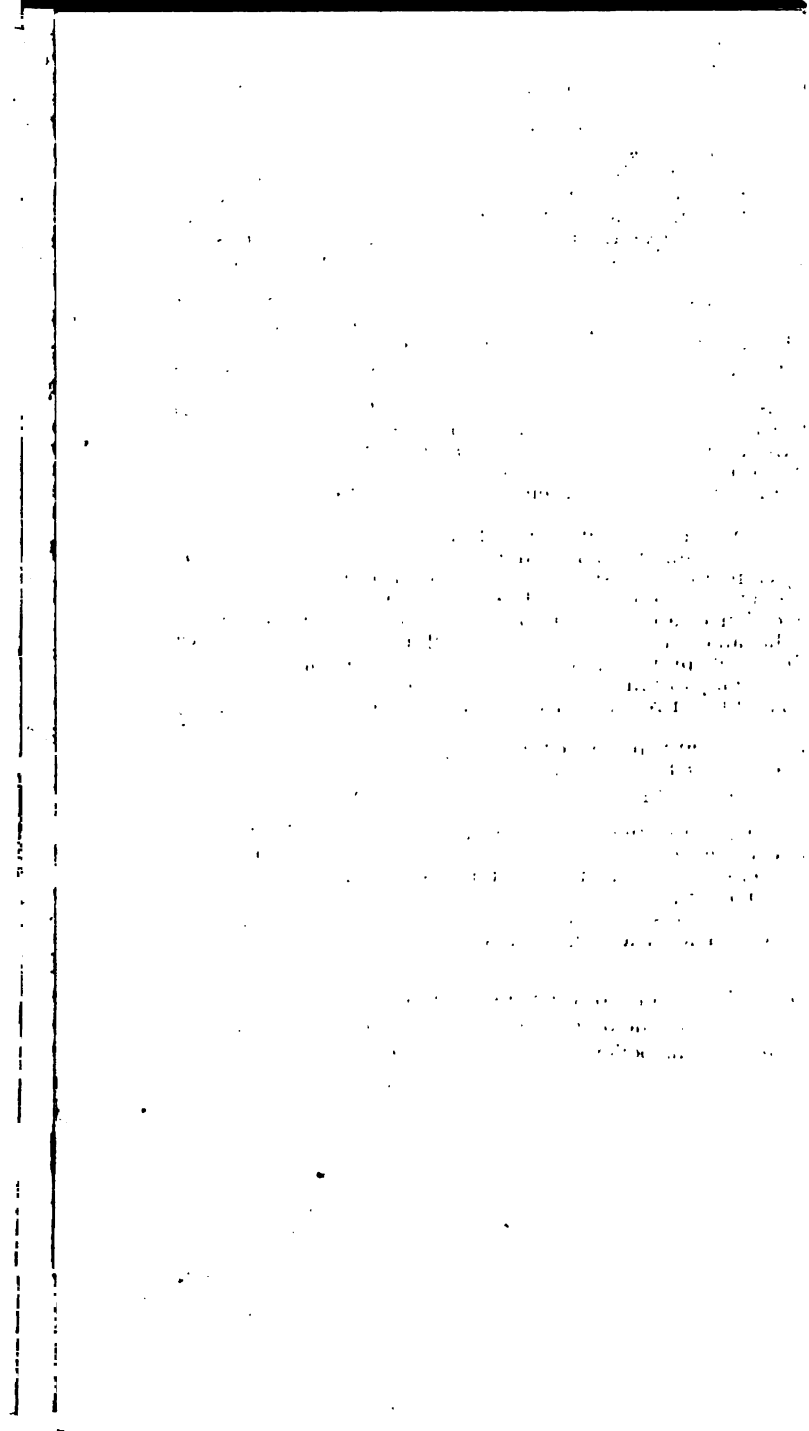
a distribution of their property to their descendants during a period of time far in excess of that during which they are allowed to tie up their estates by will, whereby they hope to avoid the statute against perpetuities and its limitations.

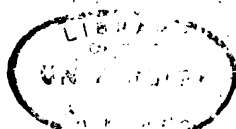
True life insurance should not be throttled by too many radical investment schemes, for they will necessarily result in complications and injure the fair name of life insurance, and the duty of the counsel of the company is to preserve the latter from side attacks. Legislative restraint to some extent will, however, come in time, and the sooner the better. Life insurance has become too well engrafted in our present system of economics to continue long without the protection of a well defined and uniform system of law applicable to its contracts.

Fundamental principles must be formulated, policy contracts must be drawn so as to be consistent with these principles, and courts and juries must be won from their prejudices, and the companies themselves must keep closer to the true insurance idea. We will all have our part to play to bring about this good result. Many of you will have to take part in the solution of these problems, some as judges, some as lawyers, others as underwriters, and others as a part of that great jury of public opinion.

During the past fifty years, we have been passing through the unknown of life insurance law. It is now time to study the situation, to get new bearings and to start for a better future. If my talk this afternoon shall lead you to study these questions, so that you may be prepared to assist in their solution, I shall not have caused you to lose entirely these fifty minutes.









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